● BLAUPUNKT
Bosch Gruppe

Video Camera Recorder
CC-824
7 618 934

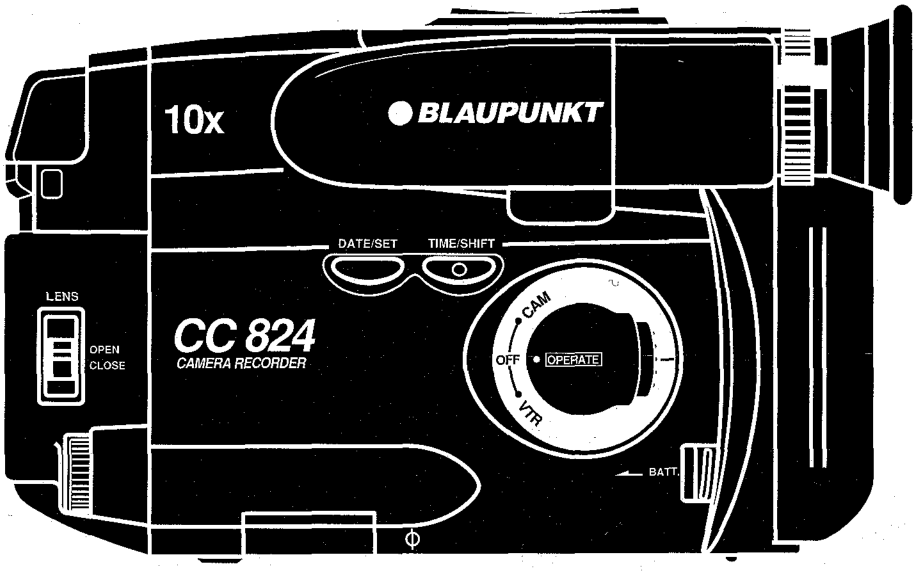
Kundendienstschrift | Service Manual

Weitere Dokumentation
Kundendienstschrift für den Netzadapter
PC-90 (MC/VKD 1 D92 420 034)

Supplementary documentation
Service Manual for AC Power Adaptor
PC-90 (MC/VKD 1 D92 420 034)

(D) Btx ✶ 30 39 681 #

K7/VKD 1 D94 420 013


10x
BLAUPUNKT
DATE/SET
TIME/SHIFT
LENS
OPEN
CLOSE
CC 824
CAMERA RECORDER
CAM
OFF
OPERATE
VTR
BATT.

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Ersatzteilliste

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.

Achtung:

Bestellen Sie immer mit der **Blaupunkt** Bestell-Nr.

Bestell-Nr. zur Explo Nr. 5-1, Seite 139
Part No. to Explo No. 5-1, page 139

Lfd. Nr. Item No.	Bestell-Nr. Part No.
1	8 619 531 285
2	8 619 403 027
3	8 619 403 032
4	8 619 511 029
5	8 619 403 034
6	8 619 511 045
7	8 619 531 273
8	8 619 531 284
10	8 619 511 501
12	8 619 531 283
13	8 619 511 044
14	8 619 511 676
15	8 619 591 511
18	8 619 591 258 (FFC-90)
19	8 619 511 547

Bestell-Nr. zur Explo Nr. 5-2, Seite 140
Part No. to Explo No. 5-2, page 140

Lfd. Nr. Item No.	Bestell-Nr. Part No.
55	8 619 511 547
57	8 619 531 286
58	8 619 511 594
59	8 619 511 037
60	8 619 511 046
62	8 619 531 288
63	8 619 403 050
64	8 619 531 289
65	8 619 581 117
66	8 619 531 488
67	8 619 403 054
68	8 619 403 055
69	8 619 403 056
70	8 619 403 057
71	8 619 511 938
76	8 619 531 490
77	8 619 511 750
79	8 619 403 069
80	8 619 531 287
81	8 619 531 290
84	8 619 591 499
85	8 619 521 285
V 901	8 619 403 067
W 501	8 619 521 649
W 971	8 619 591 259 (FFC-87)
W 986	8 619 591 260 (FP-590)
W 987	8 619 591 557 (FP-591)
W 991	8 619 591 262 (FFC-86)

Spare Parts List

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.

Attention:

Please order only the **Blaupunkt** Part No.

Bestell-Nr. zur Explo Nr. 5-3, Seite 141
Part No. to Explo No. 5-3, page 141

Lfd. Nr. Item No.	Bestell-Nr. Part No.
102	8 619 403 048
104	8 619 531 444
105	8 619 511 479 (VCL-6210WC)
106	8 619 511 955
107	8 619 581 346
108	8 619 511 784
109	8 619 581 347
111	8 619 511 586
114	8 619 403 050
116	8 619 531 443
123	8 619 581 437 (FFC-124)
125	8 619 511 501
H 516	8 619 511 197
IC 875	8 619 581 526 (ICX055AK-2)
J 901	8 619 521 287
PS 901	8 619 581 004 (1,6 A)
PS 902	8 619 581 004 (1,6 A)
W 1	8 619 591 265 (FP-588)
W 405	8 619 581 582 (FP-572)
W 519	8 619 581 438 (FFC-92)
W 521	8 619 581 587 (FP-437)
W 522	8 619 591 556 (FP-589)

Bestell-Nr. zur Explo Nr. 5-4, Seite 142
Part No. to Explo No. 5-4, page 142

Lfd. Nr. Item No.	Bestell-Nr. Part No.
151	8 619 591 493
152	8 619 511 695
153	8 619 511 696
154	8 619 581 348
155	8 619 413 168
156	8 619 511 484
157	8 619 591 468
158	8 619 511 694
159	8 619 511 399
161	8 619 591 469

Bestell-Nr. zur Explo Nr. 5-5, Seite 143
Part No. to Explo No. 5-5, page 143

Lfd. Nr. Item No.	Bestell-Nr. Part No.
201	8 619 511 874
202	8 619 511 466
203	8 619 511 890
206	8 619 511 876
209	8 619 531 426
210	8 619 511 401
211	8 619 511 877

Ersatzteilliste

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.

Achtung:
Bestellen Sie immer mit der **Blaupunkt** Bestell-Nr.

Bestell-Nr. zur Explo Nr. 5-5, Seite 143
Part No. to Explo No. 5-5, page 143

Lfd. Nr. Item No.	Bestell-Nr. Part No.
212	8 619 531 427
213	8 619 511 403
214	8 619 511 383
215	8 619 531 428
216	8 619 531 429
219	8 619 521 551
220	8 619 531 430
221	8 619 511 675
223	8 619 511 669
225	8 619 511 484
226	8 619 591 494
227	8 619 531 433
228	8 619 511 880
230	8 619 531 434
231	8 619 531 435
232	8 619 511 881
S 2	8 619 521 279

Bestell-Nr. zur Explo Nr. 5-6, Seite 144
Part No. to Explo No. 5-6, page 144

Lfd. Nr. Item No.	Bestell-Nr. Part No.
251	8 619 531 609
252	8 619 511 668
253	8 619 511 871
254	8 619 511 484
255	8 619 531 454
256	8 619 511 872
257	8 619 531 672
258	8 619 531 455
259	8 619 511 873
260	8 619 511 869
261	8 619 511 870
262	8 619 511 697
263	8 619 511 502
M 901	8 619 531 610
M 902	8 619 521 440
M 903	8 619 521 441

Bestell-Nr. zur Explo Nr. 5-7, Seite 145
Part No. to Explo No. 5-7, page 145

Lfd. Nr. Item No.	Bestell-Nr. Part No.
301	8 619 531 436
302	8 619 413 006
303	8 619 531 453
304	8 619 511 403
305	8 619 531 437

Spare Parts List

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.

Attention:
Please order only the **Blaupunkt** Part No.

Bestell-Nr. zur Explo Nr. 5-7, Seite 145
Part No. to Explo No. 5-7, page 145

Lfd. Nr. Item No.	Bestell-Nr. Part No.
306	8 619 531 438
307	8 619 511 671
308	8 619 511 882
309	8 619 511 937
310	8 619 511 883
311	8 619 521 553
312	8 619 511 382
313	8 619 531 439
315	8 619 521 552
317	8 619 531 440
318	8 619 531 441
319	8 619 511 886
320	8 619 511 887
321	8 619 581 435 (FP-444)
322	8 619 531 678
324	8 619 511 984 (FP-442)
325	8 619 581 434 (FP-575)
S 1	8 619 521 280
S 5	8 619 521 281

Bestell-Nr. zur Explo Nr. 5-8, Seite 146
Part No. to Explo No. 5-8, page 146

Lfd. Nr. Item No.	Bestell-Nr. Part No.
401	8 619 511 479 (VCL-6210WC/TYPE-A)
402	8 619 521 523
403	8 619 413 186
404	8 619 581 436
405	8 619 521 522
406	8 619 531 514
407	8 619 531 515
M 904	8 619 511 783 (IRIS/TYPE-A)
M 905	8 619 521 446 (FOCUS/TYPE-A)
M 906	8 619 521 447 (ZOOM/TYPE-A)

Bestell-Nr. zur Explo Nr. 5-9, Seite 147
Part No. to Explo No. 5-9, page 147

Lfd. Nr. Item No.	Bestell-Nr. Part No.
452	8 619 511 770 (VCL-6210WF/TYPE B)
453	8 619 521 528
454	8 619 511 470
455	8 619 531 513
M 904	8 619 521 455 (IRIS/TYPE B)
M 905	8 619 521 453 (FOCUS/TYPE B)
M 906	8 619 521 454 (ZOOM/TYPE B)

Ersatzteilliste

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.

Achtung:
Bestellen Sie immer mit der **Blaupunkt** Bestell-Nr.
Attention:
Please order only the **Blaupunkt** Part No.

Werkstatt-Hilfsmittel, Seite 166/167
Jigs and Tools, page 166/167

Position	Bezeichnung / Designation	Bestell-Nr.
J 3	Lichtkasten (PTB-500) Pattern box	8 619 591 828
J 4	Farbtestbild Color chart	8 619 591 824
J 5	Abgleich-Computer (RM-95) Adjusting Remote Control	8 619 591 821
J 6	Verbindungskabel (10 pin) Extension cable	8 619 591 719
J 7	Verbindungskabel (20 pin) Extension cable	8 619 591 266
J 8	Verbindungskabel (16 pin) Extension cable	8 619 581 578
J 9	Verbindungsplatte (21 pin) Extension board	8 619 591 878
J 10	Meßadapter Measuring pin	8 619 591 879
J 11	Verbindungskabel (42 pin) Extension cable	8 619 591 267
J 12	Schwarz-Weiß-Testbild B/W Chart (Siemens star)	8 619 591 825
J 13	Verbindungskabel (20 pin) Extension cable	8 619 581 580
J 14	Verbindungsplatte (30 pin) Extension board	8 619 591 246

Spare Parts List

Wichtige mechanische Bauteile
Important mechanical parts

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
1	Kopftrommeleinheit, kompl. Cylinder unit	8 619 531 610
2	Kopfscheibe Upper Cylinder Unit	8 619 531 609
3	Capstan Motor kompl. Capstan motor unit	8 619 521 440
4	Einfädelmotor Loading motor	8 619 521 441
5	Mikrofon Microphone unit	8 619 591 511
6	Netzadapter PC-90 AC Power adaptor PC-90	8 619 591 855
7	HF-Konverter RF-80 RFU Adaptor RF-80	8 619 591 831
8	AV-Ausgangskabel AV Output cable	8 619 591 730
9	Euro-AV Adapter Euro AV Adaptor	8 619 531 660

AU-171 PLATINE
AU-171 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
IC 601	CXA 1488 RR	8 925 900 872

CD-116 PLATINE
CD-116 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
D 875	1SS 226	8 945 406 159
D 876	MA 110* 1SS 352TPH3	8 945 405 811
D 877	1SS 181	8 925 405 604
D 878	MA 110* 1SS 352TPH3	8 945 405 811
IC 875	CCD (ICX055AK-2)	8 619 581 526
Q 875	2SD 2216 QR	8 925 705 553
Q 876	XP 4501	8 925 705 365
Q 877	2SK 1875-BL* V-TE85L	8 925 705 555

CF-34 PLATINE
CF-34 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
D 992	MA 110* 1SS 352TPH3	8 945 405 811
S 993		8 619 521 284
S 995		8 619 521 284
S 996		8 619 521 284
S 997		8 619 521 288
W 986	FP-590	8 619 591 260

CN-84 PLATINE
CN-84 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
W 991	FFC-86	8 619 591 262

DD-67 PLATINE
DD-67 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
D 901	FC 805	8 925 405 521
D 905	MA 110* 1SS 352TPH3	8 945 405 811
D 906	MA 110* 1SS 352TPH3	8 945 405 811
IC 901	MB 3785 APFV	8 925 901 137
J 901	BATTERY	8 619 521 287
J 902	REMOTE	8 619 521 692
PS 901	1,6 A	8 619 581 004
PS 902	1,6 A	8 619 581 004
Q 901	XN 4401	8 945 705 893
Q 902	UN 5213	8 945 705 659
Q 903	FP 102	8 925 705 561
Q 904	2SB 1122-S	8 925 705 591
Q 905	FP 101	8 925 705 558
Q 906	FP 101	8 925 705 558
Q 907	XN 4501	8 945 705 894
Q 908	2SB 1121	8 945 705 935
Q 909	2SB 1121	8 945 705 935
Q 910	UN 5113	8 945 705 672
S 901		8 619 521 582
T 901		8 619 531 213

ED-37 PLATINE
ED-37 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
W 987	FP-591	8 619 591 557O

Ersatzteilliste

Spare Parts List

LI-46 PLATINE
LI-46 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
H 516	BATTERIE-HALTER BATTERY HOLDER	8 619 511 197

MA-206 PLATINE
MA-206 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
D 552	MA 110* 1SS 352TPH3	8 945 405 811
IC 551	LA 7293 M-TE-L	8 925 900 527
J 551	MIC	8 619 413 343
Q 551	2SA 1586-YG	8 925 705 523

MF-214 PLATINE
MF-214 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
D 971	MA 110* 1SS 352TPH3	8 945 405 811
S 973		8 619 521 582
W 971	FFC-87	8 619 591 259

SL-41 PLATINE
SL-41 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
IC 521	LB 8111 V	8 925 901 163
Q 521	XN 4501	8 945 705 894
RB 521	10 KΩ X 10	8 940 890 212
RB 522	10 KΩ X 10	8 940 890 212
W 521	FP-437	8 619 581 587
W 522	FP-589	8 619 591 556

SW-223 PLATINE
SW-223 BOARD

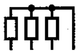
Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
S 519		8 619 521 221
S 520		8 619 521 254

VC-147 PLATINE
VC-147 BOARD

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
CT 801		8 923 910 526
FL 701		8 619 531 055
FL 702		8 619 581 311
IC 701	TC 7SU04 F -T85R	8 945 902 477
IC 702	MB 88346 BPFV-EF	8 925 901 188
IC 703	NJM 2234 M	8 925 900 584
IC 704	CXD 2101 BR	8 925 901 356
IC 705	CXD 2103 AR-T6	8 925 901 169
IC 706	CXD 2104 BN	8 925 901 187
IC 707	CXD 2100 AQ	8 925 901 154
IC 709	CXP 80624 -434R	8 925 901 189
IC 712	BR 9021 BF	8 925 901 374
IC 801	CXD 1257 AR	8 925 901 185
IC 802	CXA 1577 R-T4	8 925 901 366
IC 803	CXA 1399 Q	8 925 900 885
IC 804	CXD 1250 N	8 925 900 886
IC 805	CXA 1390 AR	8 925 900 887
IC 851	NJM 3414 M	8 905 957 234
IC 852	LM 324 DR	8 925 901 375
IC 853	MPC 1724 VMEL	8 925 901 144
IC 854	LB 1830 M	8 925 900 889
IC 856	LM 358 D	8 925 900 572
Q 701	DTC 124EE	8 925 705 563
Q 702	XP 4601	8 925 705 366

Ersatzteilliste

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
Q 703	XP 4601	8 925 705 366
Q 704	2SB 1462 Q	8 925 705 590
Q 706	2SD 2216 QR	8 925 705 553
Q 707	UN 9111	8 925 705 440
Q 708	2SD 2216 QR	8 925 705 553
Q 709	XP 4501	8 925 705 365
Q 801	2SD 2216 QR	8 925 705 553
Q 802	XP 4401	8 925 705 369
Q 851	2SD 2216 QR	8 925 705 553
Q 852	RN 1302	8 925 705 594
Q 853	XP 4401	8 925 705 369

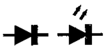


RB 701	4,7 KΩ	8 940 890 211
RB 702	47 KΩ	8 940 890 222
RB 703	1 KΩ X4	8 940 890 216
RB 704	2,2 KΩ	8 940 890 220

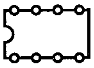
X 701	12 MHZ	8 946 193 459
X 801	28,6363 MHZ	8 946 193 464

VF-42 PLATINE
VF-42P BOARD

C 504	1 NF/50 V	8 952 299 002
C 505	3,9 NF/50V	8 952 299 009
C 506	3,9 NF/50V	8 952 299 009
C 507	3,9 NF/50V	8 952 299 009

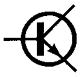


D 501	TLS 221	8 925 405 512
D 502	BR 4371F	8 945 406 306
D 503	MA 152WA	8 925 405 500

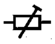


IC 501	AN 2512 S	8 925 900 528

L 503		8 619 413 340



Q 501	2SC 1623 L5L6	8 925 705 486
Q 502	2SA 1163G	8 925 705 164
Q 504	2SD 1615A-GP	8 925 705 165



RV 504	1 MΩ	8 921 500 201

Spare Parts List

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.

T 501		8 619 413 341

TH 501	NTC	8 940 599 762

W 501	SOCKEL/SOCKET	8 619 521 649

VK-32 PLATINE
VK-32 BOARD

D 977	MA 8082-M	8 925 405 509
D 978	MA 8082-M	8 925 405 509
D 979	MA 8082-M	8 925 405 509
D 980	MA 8082-M	8 925 405 509
D 981	MA 8082-M	8 925 405 509

S 976		8 619 521 275
S 979		8 619 521 275
S 980		8 619 521 275
S 983		8 619 521 275
S 984		8 619 521 275

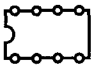
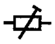
VS-116 PLATINE
VS-116 BOARD

D 1	1SS 226	8 945 406 159
D 121	MA 142WK	8 925 405 616
D 152	MA 142WA	8 925 405 574
D 159	MA 142WK	8 925 405 616
D 160	MA 142WK	8 925 405 616
D 161	MA 110* 1SS 352TPH3	8 945 405 811
D 162	MA 142WK	8 925 405 616
D 163	MA 142WK	8 925 405 616
D 401	MA 728	8 945 405 816
D 402	MA 142WK	8 925 405 616
D 403	MA 110* 1SS 352TPH3	8 945 405 811
D 456	MA 8082-M	8 925 405 509
D 462	MA 8082-M	8 925 405 509

CF 151		8 946 193 440
FL 121		8 619 531 017
FL 152		8 619 531 043
FL 153		8 619 531 016

Ersatzteilliste

Spare Parts List

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
FL 154		8 619 531 053
FL 155		8 619 531 041
FL 401		8 619 531 062
		
IC 1	CXA 1202 R	8 945 902 721
IC 3	CXA 1211 M-T3	8 925 900 890
IC 121	CXA 1203 N	8 945 902 724
IC 151	CXA 1207 AR	8 925 901 192
IC 152	CXA 1208 R-T4	8 925 901 243
IC 154	CXL 1506 M	8 925 900 582
IC 155	CXA 1211 M-T3	8 925 900 890
IC 156	M 62353 GP	8 925 901 183
IC 158	M 62353 GP	8 925 901 183
IC 159	CXA 1452	8 925 900 926
IC 401	S-8420 AF	8 925 901 139
IC 402	CXP 80624 -428R	8 925 901 193
IC 403	UPD 75316 GF-463 -3B9	8 925 901 373
IC 404	CXA 1481 AR	8 925 901 133
IC 405	AK 6420 F	8 925 900 969
IC 406	UPD 6456 GS-620	8 925 901 195
IC 408	CXA 1575 M-E2	8 925 901 371
IC 409	TL 1596 CDSB	8 945 903 140
IC 410	MPC 1720 VM	8 925 901 196
PS 401	400 MA	8 619 581 008
PS 402	800 MA	8 619 581 007
Q 1	2SA 1162	8 925 705 155
Q 3	2SA 1586-YG	8 925 705 523
Q 8	2SD 1819 A-R	8 925 705 393
Q 10	UN 5113	8 945 705 672
Q 19	2SC 1623 L5L6	8 925 705 486
Q 20	2SC 1623 L5L6	8 925 705 486
Q 21	2SA 1576 R	8 945 705 938
Q 22	2SA 1586-YG	8 925 705 523
Q 24	2SC 2223-F13	8 925 705 174
Q 25	RN 2302	8 925 705 497
Q 26	2SD 1819 A-R	8 925 705 393
Q 121	UN 5113	8 945 705 672
Q 123	UN 5213	8 945 705 659
Q 124	UN 5113	8 945 705 672
Q 125	2SC 4178	8 925 705 568
Q 126	2SD 1819 A-R	8 925 705 393
Q 151	2SB 798-DL	8 925 705 172
Q 152	2SD 1819 A-R	8 925 705 393
Q 154	2SD 1819 A-R	8 925 705 393
Q 158	2SD 1819 A-R	8 925 705 393
Q 160	UN 5113	8 945 705 672
Q 161	2SD 1819 A-R	8 925 705 393
Q 162	UN 5113	8 945 705 672
Q 166	2SA 1586-YG	8 925 705 523
Q 168	UN 5113	8 945 705 672
Q 170	XN 4312	8 925 705 356
Q 171	2SC 4178	8 925 705 568
Q 175	2SD 1819 A-R	8 925 705 393
Q 176	2SD 1819 A-R	8 925 705 393
Q 177	2SA 1586-YG	8 925 705 523
Q 178	2SA 1586-YG	8 925 705 523
Q 180	XN 4215	8 945 705 670
Q 182	2SD 1819 A-R	8 925 705 393
Q 183	UN 5115	8 945 705 718
Q 184	2SD 1819 A-R	8 925 705 393
Q 189	2SD 1819 A-R	8 925 705 393
Q 191	2SD 1819 A-R	8 925 705 393
Q 192	2SD 1819 A-R	8 925 705 393
Q 194	2SD 1819 A-R	8 925 705 393
Q 195	2SA 1586-YG	8 925 705 523
Q 196	UN 5113	8 945 705 672
Q 199	2SB 1295 -UL6	8 925 705 383
Q 200	RN 1302	8 925 705 594
Q 203	2SA 1586-YG	8 925 705 523
Q 204	2SD 1819 A-R	8 925 705 393
Q 205	UN 5213	8 945 705 659
Q 207	UN 5113	8 945 705 672
Q 208	RN 1302	8 925 705 594
Q 210	UN 5213	8 945 705 659
Q 212	2SA 1586-YG	8 925 705 523
Q 214	XN 4213 -TW	8 925 705 384
Q 219	UN 5112	8 945 705 664
Q 220	UN 5212	8 945 705 663
Q 221	XN 4213 -TW	8 925 705 384
Q 222	2SD 1819 A-R	8 925 705 393
Q 223	UN 5213	8 945 705 659
Q 226	UN 5113	8 945 705 672
Q 229	2SA 1586-YG	8 925 705 523
Q 230	2SD 1819 A-R	8 925 705 393
Q 231	2SA 1586-YG	8 925 705 523
Q 232	2SD 1819 A-R	8 925 705 393
Q 233	2SD 1819 A-R	8 925 705 393
Q 234	2SA 1586-YG	8 925 705 523
Q 236	UN 511 E	8 925 705 498
Q 237	2SA 1586-YG	8 925 705 523
Q 401	UN 521 E	8 925 705 595
Q 405	RN 1302	8 925 705 594
Q 409	2SB 1574	8 925 705 499
R 73	15 KΩ NTC	8 940 599 806
R 113	470 Ω NTC	8 940 599 762
RB 401	330 KΩ	8 940 890 219
RB 402	100 KΩ X4	8 940 890 266
RB 404	10 KΩ X4	8 940 890 269
RB 410	1 KΩ X4	8 940 890 216
RB 411	10 KΩ X10	8 940 890 212
RB 418	470 Ω	8 940 890 213
		
RV 151	1 KΩ	8 941 599 760
W 1	FP-588	8 619 591 265
W 405	FP-572	8 619 581 582

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.
X 151	4,43 MHZ	8 946 193 439
X 401	4,19 MHZ	8 946 193 457
X 402	32,768 KHZ	8 946 193 351
X 403	11,89 MHZ	8 946 193 438

Hinweis:
Handelsübliche Kondensatoren und Widerstände sind in der Ersatzteilliste nicht aufgeführt. Wir bitten Sie, diese Teile im Fachhandel zu beziehen.

Note:
Capacitors and resistors usual in trade are not mentioned in the spare parts list. Kindly buy these parts from the specialized trade.

Position Position	Bezeichnung Designation	Bestell-Nr. Part no.

CCD-TR350E

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Russian Model
Tourist Model

10x
SONY
Video8
Handycam
POWER

Video8
Handycam

A MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ" (9-973-199-11).

SPECIFICATIONS

System

Video recording system	Two rotary heads, Helical scanning FM system
Audio recording system	Two rotary heads, FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette (standard 8 mm)
Tape speed	SP mode: Approx. 2.0051 cm (13/16 inches)/s LP mode: Approx. 1.0058 cm (13/32 inches)/s (playback only)
Recording time	SP mode: 1.5 hours (P5-90)
Playback time	SP mode: 1.5 hours (P5-90) LP mode: 3 hours (P5-90)
Fastforward/rewind time	Approx. 6 min 30 s (P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder monochrome
Lens	Combined 10 x Power zoom lens f = 6.2 to 62 mm (1/4 to 2 7/16 inches) F 1.6 to 2.9 (45 to 450 mm when converted to a 35 mm still camera) Filter diameter 37 mm (1 1/2 inches) TTL autofocus system inner focus wide macro system
Colour temperature	Auto
Minimum illumination	2 lx (F 1.6)
Illumination range	2 lx to 100,000 lx
Recommended illumination	More than 100 lx

Input and output connectors

Video output	Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio output	Phono jack, −7.5 dBs, (at load impedance 47 kΩ) Impedance less than 2.2 kΩ
RFU DC OUT	Special minijack, DC 5 V
Remote jack	Stereo mini-minijack (ø 2.5 mm)
MIC jack	Minijack, − 66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kΩ (ø 3.5 mm)

— Continued on next page —

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor)
Average power consumption	5.3 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Dimensions	Approx. 109 x 109 x 178 mm (w/h/d) (4 3/8 x 4 3/8 x 7 1/8 inches)
Mass	Approx. 760 g (1 lb 11 oz) excluding the battery pack, lithium battery and cassette Approx. 980 g (2 lb 2 oz) including the battery pack NP-55, lithium battery CR2025, cassette P5-60
Microphone	Electric condenser microphone, monaural type

AC power adaptor

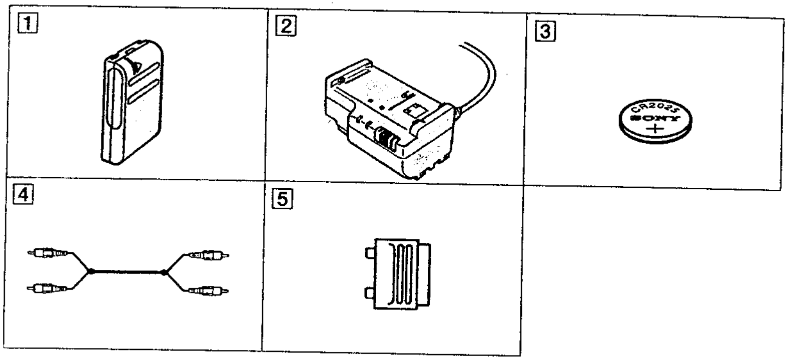
Power requirements	110-240 V AC, 50/60 Hz
Power consumption	15 W (AC-V25) / 17 W (AC-V25A)
Output voltage	DC OUT: 7.5 V, 1.2 A (AC-V25) 7.5 V, 1.5 A (AC-V25A) in operating mode Battery charge terminal: 10 V, 1.1 A in charge mode
Application	Sony battery packs NP-55/55H, NP-66/66H, NP-77H/77HD
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to 140°F)
Dimensions	Approx. 103 x 49 x 63 mm (w/h/d) (4 1/8 x 1 15/16 x 2 1/2 inches) including projecting parts and controls
Mass	Approx. 290 g (10 oz) (AC-V25) Approx. 320 g (11 oz) (AC-V25A)

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Supplied accessories



1 **NP-55 Battery pack** (1)

2 **AC-V25/V25A AC power adaptor** (1)

3 **CR2025 Lithium Battery (Installed in the camcorder)** (1)

4 **A/V connecting cable** (1)

5 **21-pin adaptor** (1)

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

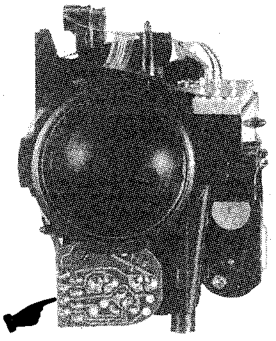
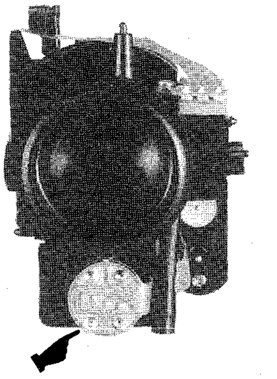
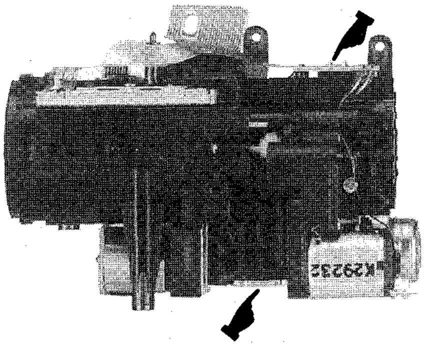
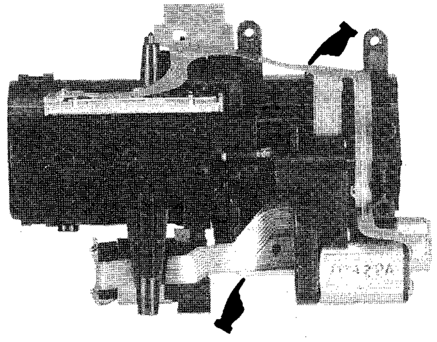
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

【Zoom lens】

This unit employs two types of lens.
Note that the lenses are interchangeable, however their components are not.

Differentiating the lens ☛ : difference point

TYPE A (VCL-6210WC)	TYPE B (VCL-6210WF)
From the front of the lens 	From the front of the lens 
From the right side of the lens (as seen from the front) 	From the right side of the lens (as seen from the front) 

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

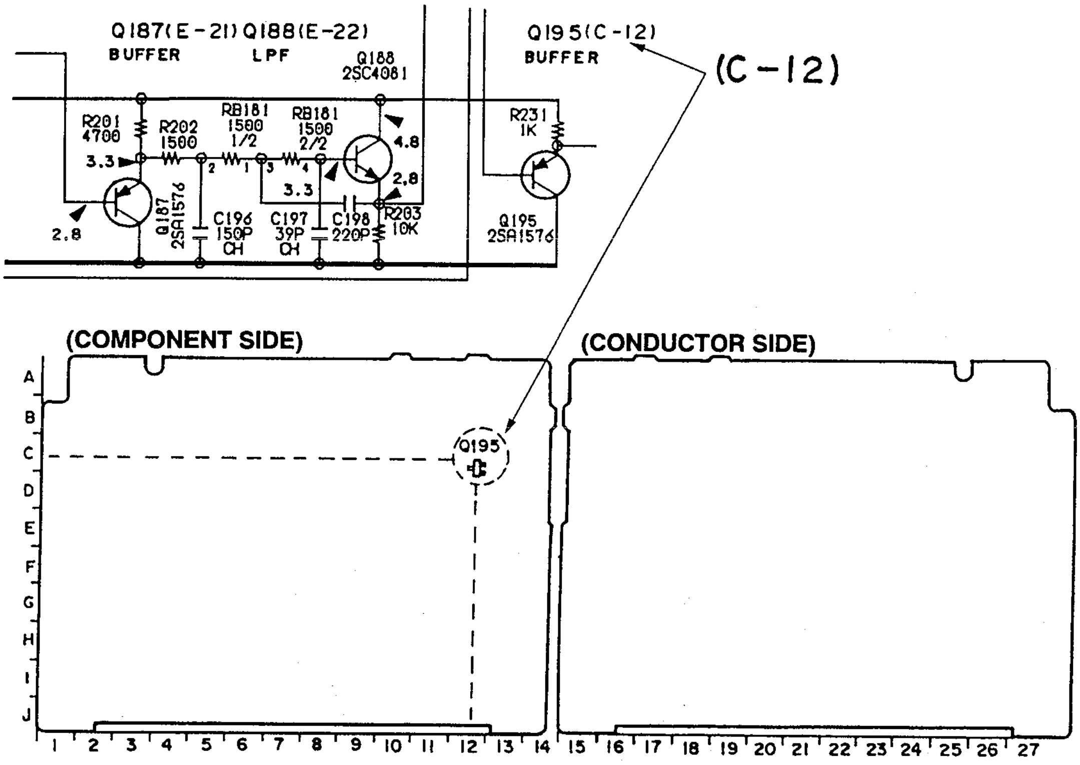
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See page 96, 97 108, 109, 133 and 135.)
This diagram is useful for repair.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195(C-12)
BUFFER
R231
1K
Q195
2SA1576
(C-12)
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
I
J
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[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✖] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

This section is extracted from instruction manual.

Charging and Installing the Battery Pack

Carga e instalación de la batería

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V25/V25A AC power adaptor.

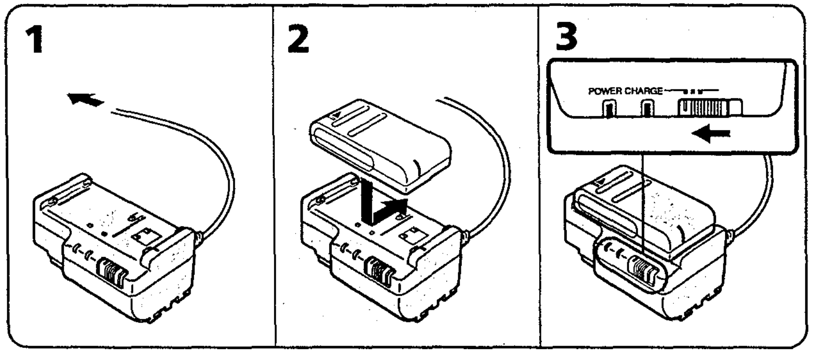
Charging the Battery Pack

Charge the battery pack on a flat place without vibration.
(1) Connect the power cord to a wall outlet.
(2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow. **(3)** Set the selector to CHARGE. Charging begins.
When charging is completed, the CHARGE lamp goes out. Set the selector to the center position and unplug the unit from the wall outlet. Then remove the battery pack and install it on the camcorder.
To stop charging, set the selector to the center position.

Antes de utilizar la videocámara es necesario cargar primero la batería y luego instalarla. Para cargar la batería, utilice el adaptador de CA AC-V25/V25A suministrado.

Carga de la batería

Cargue la batería sobre una superficie plana sin vibraciones.
(1) Conecte el cable de alimentación a una toma de corriente de la pared. **(2)** Alinee el lado derecho de la batería con la línea del adaptador de alimentación de CA y luego deslice la batería en la dirección de la flecha. **(3)** Ponga el selector en CHARGE. La carga comienza.
Al finalizar la carga, la lámpara CHARGE se apaga. Ponga el selector en la posición central y desenchufe la unidad de la toma de la pared. Luego retire la batería e instálela en la videocámara.
Para parar la carga, ponga el selector en la posición central.



Charging Time

Battery pack	Charging time*
NP-55 (supplied)	70
NP-77H/77HD	160
NP-66H	120
NP-55H	80

* Approximate minutes to charge an empty battery pack using the AC-V25/V25A. (Lower temperatures require a longer charging time.)

Battery Life

The battery life of a colour viewfinder is indicated in the parentheses.

Battery pack	Typical recording time**	Continuous recording time***
NP-55 (supplied)	30 (25)	60 (50)
NP-77H NP-77HD	75 (70)	150 (135)
NP-66H	55 (50)	110 (100)
NP-55H	35 (30)	70 (60)

** Approximate minutes when recording while you repeat recording start/stop and turning the power on/off. The actual battery life may be shorter.

*** Approximate continuous recording time indoors.

Tiempo de carga

Batería	Tiempo de carga*
NP-55 (suministrada)	70
NP-77H/77HD	160
NP-66H	120
NP-55H	80

* Minutos aproximados necesarios para cargar una batería agotada empleando el AC-V25/V25A. (Cuando la temperatura esté muy baja, el tiempo de carga aumentará.)

Duración de las baterías

La duración de la batería para el visor en color se muestra entre paréntesis.

Batería	Tiempo de grabación normal**	Tiempo de grabación continua***
NP-55 (suministrada)	30 (25)	60 (50)
NP-77H NP-77HD	75 (70)	150 (135)
NP-66H	55 (50)	110 (100)
NP-55H	35 (30)	70 (60)

** Minutos aproximados cuando se grabe repitiendo las funciones de inicio/parada y conexión/desconexión de la alimentación. La duración actual de la batería puede que sea más corta.

*** Tiempo de grabación continua aproximado en interiores.

Charging and Installing the Battery Pack

Carga e instalación de la batería

Important

Use the battery completely before re-charging!

Before you recharge the battery, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and set the POWER switch to CAMERA with the battery attached, and leave the camcorder until the 🪫 indicator and the red lamp flash in the viewfinder.

Removing the Battery Pack

Slide the battery pack in the direction of the arrow (see drawing).

Importante

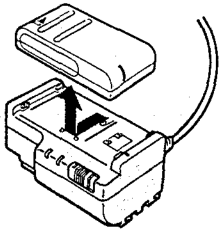
¡Emplee la batería hasta agotarla antes de volver a cargarla!

Antes de cargar la batería, asegúrese de que ésta esté completamente agotada (descargada). Si carga repetidamente la batería sin haberse agotado ésta por completo, la capacidad de la batería se reducirá. Sin embargo, la capacidad original de la batería podrá recuperarse si la emplea hasta que se agote por completo y luego vuelve a cargarla completamente.

Para que la batería se agote por completo, extraiga el videocasete y deslice el conmutador POWER hasta CAMERA estando colocada aún la batería. Deje así la videocámara hasta que el indicador 🪫 y la lámpara roja parpadeen en el visor.

Extracción de la batería

Deslice la batería en la dirección de la flecha (vea la ilustración).



Note on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

Notas sobre la carga de las baterías

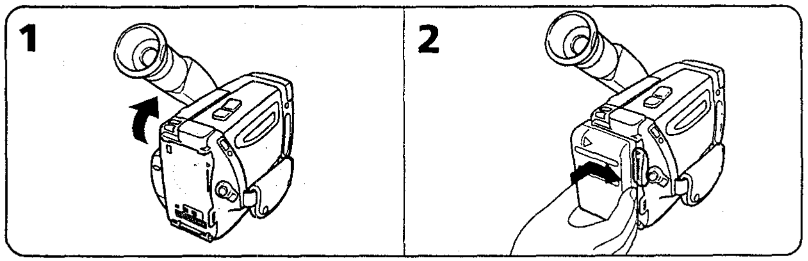
- La lámpara POWER permanecerá encendida durante un rato a pesar de extraer la batería y desenchufar el cable de alimentación después de cargarse la batería. Esto es normal.
- Si no se enciende la lámpara POWER, ponga el selector en la posición central y desconecte el cable de alimentación. Después de pasar un minuto aproximadamente, vuelva a conectar el cable de alimentación y ponga de nuevo el selector en CHARGE.
- Cuando esté cargando la batería no podrá utilizar la videocámara empleando el adaptador de alimentación de CA.

Installing the Battery Pack

(1) Lift up the viewfinder. (2) Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.

Instalación de la batería

(1) Levante el visor. (2) Alinee el lado derecho de la batería con la línea blanca de la videocámara y deslice la batería hacia la derecha.

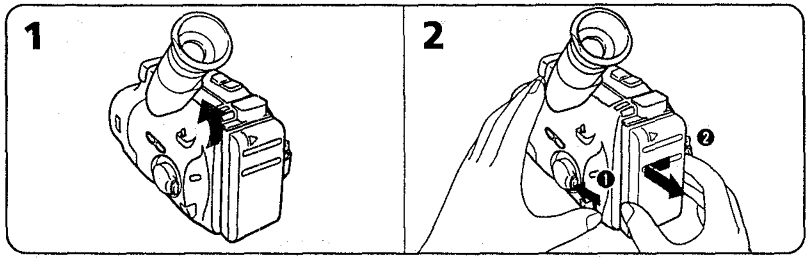


Removing the Battery Pack

(1) Lift up the viewfinder. (2) While pressing BATT, slide the battery pack to the left.

Extracción de la batería

(1) Levante el visor. (2) Mientras presiona BATT, deslice la batería hacia la izquierda.



Tips for Using the Battery Pack

This section shows you how you can get the most out of your battery pack.

Preparing the Battery Pack

Always Carry Additional Batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery Life is Shorter in Cold Environment

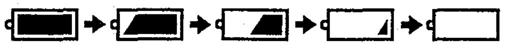
Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environment.

To Save Battery Power

Turn STANDBY on the camcorder down when not recording to save battery power. **[a]**
A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the ▭ indicator appears and starts flashing in the viewfinder. **[b]**
When the ▭ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack is replaced.

Sugerencias para emplear la batería

Esta sección muestra cómo sacar el mayor rendimiento de su batería.

Preparación de la batería

Lleve siempre baterías de repuesto

Prepare baterías para poder emplear la videocámara el doble o el triple del tiempo de grabación planeado.

La duración de la batería se reduce en climas fríos

La eficacia de la batería se reduce, y ésta se agotará más rápidamente, si se usa para grabar en climas fríos.

Ahorro de energía de la batería

Para ahorrar energía, mueva hacia abajo STANDBY de la videocámara cuando no grabe. **[a]**
Entre las escenas puede hacerse una transición suave a pesar de parar e iniciar de nuevo la grabación. Mientras se coloca el sujeto, se selecciona el ángulo o se mira a través de la lente del visor, la lente se mueve automáticamente y la batería se utiliza. También se usa energía de la batería al insertar o extraer una cinta.

Reemplazo de la batería

Mientras utiliza su videocámara, el indicador del estado de la batería disminuye gradualmente al utilizarse la energía de la batería.

Cuando el indicador del estado de la batería alcance el punto inferior, el indicador ▭ aparecerá y empezará a parpadear en el visor. **[b]**
Cuando el indicador ▭ del visor deje de parpadear lentamente y pase a parpadear rápidamente mientras graba, deslice el conmutador POWER hasta OFF en la videocámara y reemplace la batería. Deje la cinta en la videocámara para permitir una transición suave entre escenas después de reemplazar la batería.

Note on the remaining battery indicator
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with its own indicator (not supplied). The indicator of the battery pack is more accurate.

Note on the Rechargeable Battery Pack

The Battery Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself). **[c]**

The Life of the Battery Pack

The battery pack can be fully charged and discharged about 500 times under normal temperatures. If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature

You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Nota sobre el indicador del estado de la batería
El indicador del estado de la batería de la videocámara puede indicar una capacidad restante diferente de la indicada en la batería con su propio indicador (no suministrada). El indicador de la batería es más preciso.

Nota sobre la batería

La batería se calienta

La batería se calienta durante la carga o la grabación. Esto se debe a la energía que ha sido generada y a un cambio químico producido en el interior de la batería. Esto no debe ser motivo de preocupación.

Cuidados de la batería

- Extraiga la batería de la videocámara después de haberla utilizado y guárdela en un lugar fresco. Cuando coloque la batería en la videocámara fluirá un poco de corriente a la videocámara incluso cuando el conmutador POWER esté en OFF, lo que reduce la duración de la batería.
- La batería siempre está descargándose, a pesar de no estar siendo utilizada después de haber sido cargada. Por lo tanto, la batería debe cargarse justo antes de utilizar la videocámara.

Empleo del conmutador de la batería

Este conmutador sirve para marcar las baterías cargadas. Póngalo en la posición "sin marca" al terminar la carga. Ponga el conmutador en la "marca roja" cuando la batería esté agotada (o póngalo en la posición que más sencillo le resulte recordar el estado de la batería). **[c]**

Duración de la batería

La batería puede cargarse completamente unas 500 veces a temperaturas normales. Si el indicador del estado de la batería parpadea rápidamente justo después de encender la videocámara con una batería completamente cargada, la batería tendrá que cambiarse por otra nueva totalmente cargada.

Temperatura durante la carga

Las baterías deben cargarse a temperaturas de entre 10°C y 30°C. A temperaturas más bajas, el tiempo de carga será mayor.

Tips for Using the Battery Pack

Note on Charging

A Brand-new Battery

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the 🔋 indicator appears in the viewfinder, you should remove the tape, set the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor or the DC-S10 car battery charger, you can use the discharging function.
- **Charging the usable battery causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery again.**

After Long Storage

Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Note on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, wipe the + and − terminals with a soft cloth or paper.

Be Sure to Observe the Following

- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. Carry the battery pack attaching to the terminal cover. [d]**

Sugerencias para emplear la batería

Nota sobre la carga

Batería nueva

La batería nueva no está cargada. Cargue completamente la batería antes de emplearla.

Antes de cargar una batería usada

- Asegúrese de que la batería esté completamente agotada antes de cargarla.
- Si la grabación termina antes de que el indicador 🔋 aparezca en el visor, la cinta deberá extraerse, el conmutador POWER deberá ponerse en CAMERA, STANDBY deberá girarse hacia arriba y la videocámara deberá dejarse encendida hasta que el indicador del estado de la batería parpadee rápidamente.
- Cuando emplee el adaptador de alimentación AC-S10 o el cargador de baterías de automóvil DC-S10, podrá emplear la función de descarga.
- **La carga de una batería que no está completamente descargada reduce su capacidad. La capacidad de la batería puede recuperarse descargándola completamente y volviéndola a cargar.**

Después de estar guardada durante largo tiempo

Cargue la batería después de haber estado ésta guardada durante largo tiempo. Si la batería se carga completamente pero no se emplea durante mucho tiempo (1 año aproximadamente), se descargará. Cárguela de nuevo, pero en este caso su duración se reducirá. Después de cargarla y descargarla varias veces, la batería recuperará su capacidad original.

Nota sobre los terminales

Si los terminales (las partes metálicas del lado posterior) no están limpios, la duración de la batería se reducirá. Cuando los terminales no estén limpios, o cuando no haya empleado la batería durante mucho tiempo, instale y extraiga la batería varias veces. Esto mejorará el contacto. Además, frote los terminales + y − con un paño o papel suave.

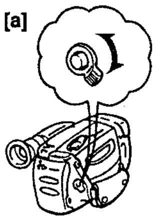
No se olvide de los puntos siguientes

- **Para evitar accidentes debidos a un cortocircuito, no permita que objetos metálicos, como por ejemplo un collar, toquen los terminales de la batería. Lleve la batería con la tapa de terminales colocada. [d]**

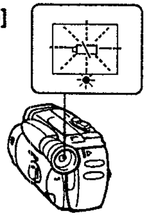
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

- Mantenga la batería alejada del fuego.
- Mantenga seca la batería.
- No abra ni altere la batería.
- No exponga la batería a ningún golpe mecánico.

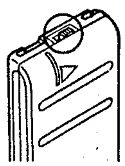
[a]



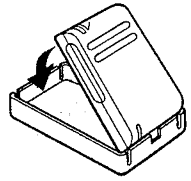
[b]



[c]



[d]

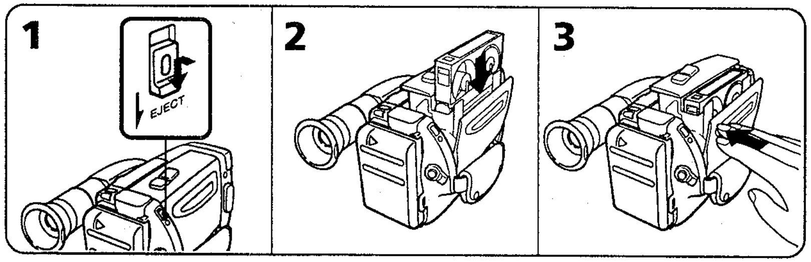


Inserting a Cassette

Make sure that the power source is installed.
(1) While pressing the small blue button on the EJECT knob, slide it down. The cassette holder automatically lifts up and opens. **(2)** Insert a cassette with the window facing out. **(3)** Close the cassette holder by pressing the "PUSH" mark on the cassette holder.

Inserción de un videocasete

Asegúrese de que la fuente de alimentación esté instalada.
(1) Mientras presiona el pequeño botón azul del pomo EJECT, deslice el pomo hacia abajo. El compartimiento del videocasete se eleva y se abre. **(2)** Inserte un videocasete con la ventanilla hacia afuera. **(3)** Cierre el compartimiento del videocasete presionando su marca "PUSH".



To Eject the Cassette

While pressing the small blue button on the EJECT knob, slide it down.

Expulsión del videocasete

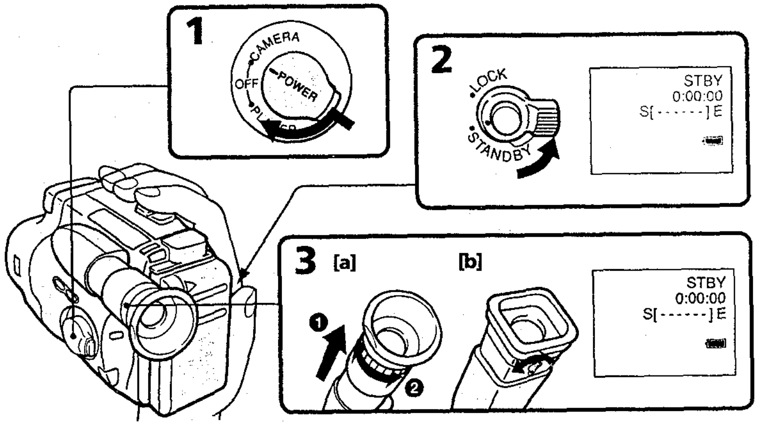
Mientras presiona el pequeño botón azul del pomo EJECT, deslice el pomo hacia abajo.

Adjusting the Viewfinder Lens

Before you use the camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is attached to the camcorder.
(1) While pressing the green button of the POWER switch, turn it to CAMERA. **(2)** Turn STANDBY up. **(3)** Focus on the indicators:
[a] When using a monochrome viewfinder, pull out the viewfinder until it clicks, and turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus. **[b]** When using a colour viewfinder, move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.

Ajuste de la lente del visor

Antes de utilizar la videocámara por primera vez o después de haberla empleado otra persona, ajuste la lente del visor. Asegúrese de que haya una fuente de alimentación conectada en la videocámara.
(1) Manteniendo presionado el pequeño botón verde del conmutador POWER, deslice el conmutador hasta CAMERA. **(2)** Gire STANDBY hacia arriba. **(3)** Ajuste la lente del visor: **[a]** Cuando utilice un visor en blanco y negro, tire del visor hasta que haga un ruido seco, y gire el anillo de ajuste de la lente del visor para que los indicadores del visor puedan verse claramente. **[b]** Cuando utilice un visor en color, mueva la palanquilla de ajuste del visor para que los indicadores del visor puedan verse claramente.



When Using a Colour Viewfinder

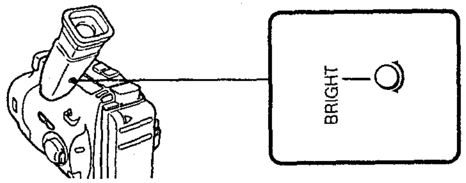
To adjust the picture quality

If you want to change brightness of the picture displayed on the viewfinder screen, turn the screw on the viewfinder slowly using a screwdriver (not supplied). To get more brightness, turn it clockwise. To get less brightness, turn it counterclockwise. You do not need to adjust it in everyday operation.

Cuando utilice un visor en color

Para ajustar la calidad de la imagen

Si usted desea cambiar el brillo de la imagen visualizada en la pantalla del visor, gire lentamente el tornillo del visor utilizando un destornillador (no suministrado). Para obtener más brillo, gírelo hacia la izquierda. Para obtener menos brillo, gírelo hacia la derecha. No necesitará ajustarlo todos los dias que utilice la videocámara.



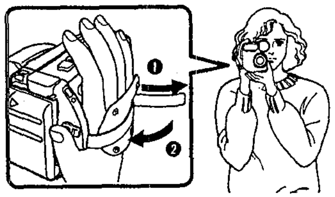
Hints for Better Shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

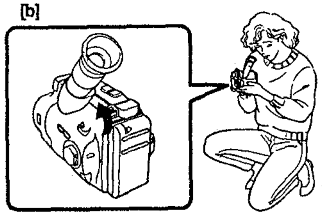
Sugerencias para filmar mejor

Para obtener los mejores resultados cuando filme sujetando la videocámara con la mano, sujétela de acuerdo a las sugerencias siguientes:

[a]



[b]



- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. **[a]**
- When using the monochrome viewfinder, you can also record in a low position to get an interesting recording angle. Turn the viewfinder up for recording from a low position. **[b]**

(See next page for further information.)

- Sujete firmemente la videocámara y asegúrela con la correa de la empuñadura para poder manipular fácilmente los controles con su dedo pulgar. **[a]**
- Cuando ulitice un visor en blanco y negro, también podrá grabar desde una posición baja para obtener un interesante ángulo de grabación. Gire el visor hacia arriba para grabar desde una posición baja. **[b]**

(Vea la página siguiente para más información.)

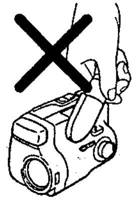
Hints for Better Shooting

- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.

Cautions on the Viewfinder

- **Do not pick up the camcorder by the viewfinder. [c]**
- **Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder heats up and may be damaged. [d]**

[c]



Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 42). Make sure the tripod screw is shorter than 6.5 mm (9/32 in).

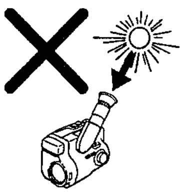
Sugerencias para filmar mejor

- Apoye el codo derecho en su costado.
- Ponga su mano izquierda debajo de la videocámara para apoyarla.
- Apoye firmemente su ojo en el ocular del visor.
- Emplee el cuadro del visor como guía para determinar el plano horizontal.

Precauciones con el visor

- **No sujete la videocámara por el visor. [c]**
- **No coloque la videocámara de forma que su visor quede orientado hacia el sol. El interior del visor se calentará y podría estropearse. [d]**

[d]



Colocación de la videocámara sobre una superficie plana o un trípode

Trate de poner la videocámara sobre una mesa u otra superficie plana de altura apropiada. Si dispone de un trípode para cámara fotográfica, también podrá emplearlo con la videocámara (página 42). Asegúrese de que la longitud del tornillo del trípode sea inferior a 6,5 mm.

Camera Recording

Make sure that the power source is installed and a cassette is inserted. When you start recording, the date is automatically recorded for 10 seconds (AUTO DATE feature). This feature works only once a day.

Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working perfectly.

(1) Slide the LENS COVER switch to OPEN.

(2) Turn on the power: **[a]** When using a monochrome viewfinder, pull out the viewfinder until it clicks. While pressing the green button of the POWER switch, turn it to CAMERA.

[b] When using a colour viewfinder, while pressing the green button of the POWER switch, turn it to CAMERA. **(3)** Turn STANDBY up. Adjust the viewfinder lens so that the indicators in the viewfinder come into sharp focus (p. 14).

(4) Press START/STOP. As the camcorder starts recording, the red lamp in the viewfinder and the camera recording/battery lamp on the camcorder light up.

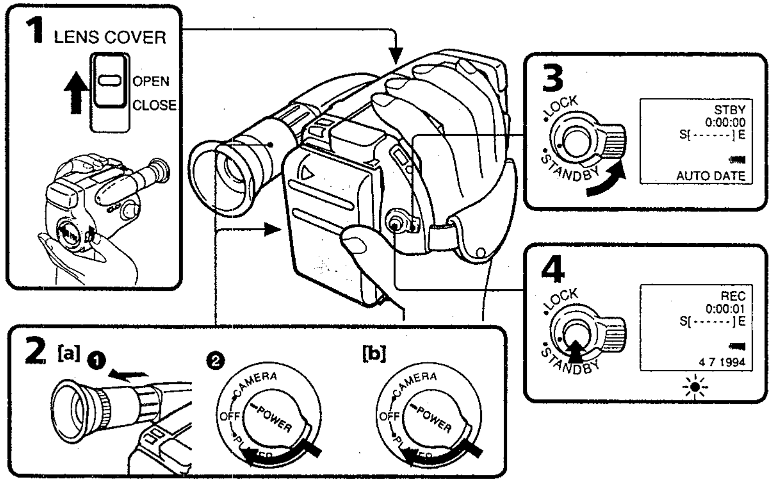
Grabación con videocámara

Asegúrese de que la videocámara tenga la fuente de alimentación instalada y haya un videocasete en su interior. Cuando usted comienza a grabar, la fecha se graba automáticamente durante 10 segundos (característica AUTO DATE). Esta característica sólo funciona una vez al día.

Antes de realizar grabaciones inolvidables, se recomienda realizar una grabación de prueba para asegurarse de que todo funciona perfectamente.

(1) Deslice el conmutador LENS COVER hasta OPEN. **(2)** Conecte la alimentación: **[a]** Cuando utilice un visor en blanco y negro, saque el visor hasta que haga un ruido seco. Manteniendo presionado el botón verde del conmutador POWER, deslice el conmutador hasta CAMERA.

[b] Cuando utilice un visor en color, manteniendo presionado el botón verde del conmutador POWER, deslice el conmutador hasta CAMERA. **(3)** Gire STANDBY hacia arriba. Ajuste la lente del visor de forma que los indicadores del visor puedan verse claramente (página 14). **(4)** Presione START/STOP. Cuando comience la grabación, la lámpara roja en el visor y la de grabación con videocámara/estado de la batería en la videocámara se encenderán.



To Stop Recording Momentarily

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

To Finish Recording

Turn STANDBY down and set the POWER switch to OFF. Slide the LENS COVER switch to CLOSE and eject the tape (p. 13).

Notes on Standby mode

If you leave the camcorder in Standby mode for 5 minutes, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

Note on the AUTO DATE feature

- The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:
  - you reset the date and time.
  - you eject and insert the tape again.
  - you stop recording within 10 seconds.
- Once the AUTO DATE feature turns off the date display 10 seconds after the start of recording, the date and time are displayed as follows:
  - If the date display setting has been made, the date is displayed.
  - If the time display setting has been made, the time is displayed.
  - If neither display setting has been made, nothing is displayed.

If you wear glasses

When using a monochrome viewfinder, you can bend back the eyecup to get a better view of the viewfinder.

When using a colour viewfinder, you cannot bend back the eyecup.

Para parar momentáneamente la grabación

Vuelva a presionar START/STOP. El indicador "STBY" aparecerá en el visor (**modo de espera**).

Para finalizar la grabación

Gire STANDBY hacia abajo y deslice el conmutador POWER hasta OFF. Deslice el conmutador LENS COVER hasta CLOSE y expulse la cinta (página 13).

Notas sobre el modo de espera

Si deja la videocámara en el modo de espera durante 5 minutos, la videocámara se apagará automáticamente. Esto evitará que se agote la batería y se desgaste la cinta. Para restablecer el modo de espera, gire STANDBY hacia abajo una vez y luego vuelva a girarlo hacia arriba. Para iniciar la grabación, presione START/STOP.

Nota sobre el contador de cinta

El contador de cinta indica el tiempo de grabación o el de reproducción. Emplee este contador a modo de guía. Entre el tiempo indicado y el tiempo real puede haber una diferencia de varios segundos. Para poner el contador a cero, presione COUNTER RESET.

Nota sobre la característica AUTO DATE

- La característica AUTO DATE funciona una vez al día. Sin embargo, la fecha aparecerá automáticamente más de una vez al día cuando:
  - Reponga la fecha y la hora.
  - Expulse e inserte de nuevo la cinta.
  - Pare la grabación antes de transcurrir 10 segundos.
- Una vez que la característica AUTO DATE apague la visualización de la fecha 10 segundos después de iniciar la grabación, la fecha y la hora se visualizarán de la forma siguiente:
  - Si ha ajustado la visualización de la fecha, se visualizará la fecha.
  - Si ha ajustado la visualización de la hora, se visualizará la hora.
  - Si no ha ajustado ninguna de las dos, no se visualizará nada.

Si se emplean gafas

Cuando utilice un visor en blanco y negro, el ocular podrá doblarse hacia atrás para obtener una mejor vista del visor.

Cuando utilice un visor en color, no podrá doblar el ocular hacia atras.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

You can record tapes in SP (standard play) mode only.

Cambio de interiores a exteriores (o viceversa)

Gire STANDBY hacia arriba y dirija la videocámara hacia un objeto blanco durante unos 15 segundos para que el balance de blancos se ajuste correctamente.

Nota sobre la grabación

Para grabar desde el comienzo de la cinta, haga que ésta avance unos 15 segundos antes de empezar a grabar. Esto evitará que se pierdan las escenas iniciales al reproducir la cinta.

Las cintas sólo pueden grabarse en el modo SP (reproducción estándar).

Preventing Accidental Erasure

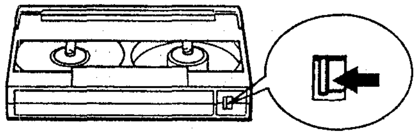
To prevent accidental erasure, slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the ▣ and ▲ indicators flash in the viewfinder, and you cannot record.

To re-record on this tape, slide the tab back out covering the red mark.

Prevención contra borrado accidental

Para evitar el borrado accidental, deslice la lengüeta del videocasete hasta dejar expuesta la marca roja. Si trata de grabar estando expuesta la marca roja, los indicadores ▣ y ▲ parpadearán en el visor y no podrá grabar.

Para grabar en esta cinta, deslice la lengüeta para tapar la marca roja.



Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. You can also use the zoom to decide on a shooting angle before you start recording.

For more professional-looking recordings, use the zoom function sparingly.

"T" side: for telephoto (subject appears closer)

"W" side: for wide-angle (subject appears farther away)

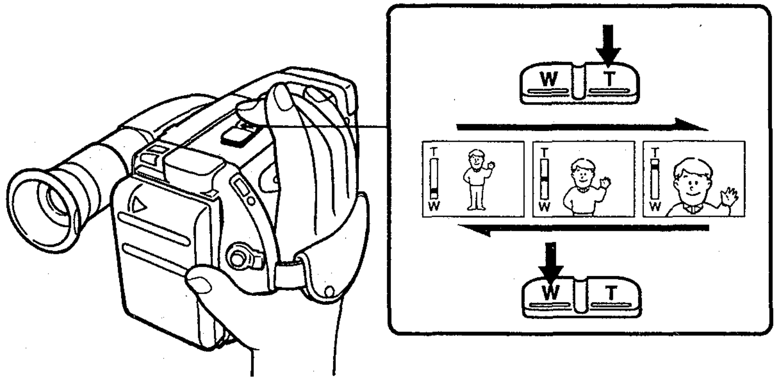
Empleo del zoom

"Zooming" es una técnica de grabación que le permite cambiar el tamaño del motivo en la escena. El zoom puede emplearse también para decidir el ángulo de filmación antes de empezar a grabar.

Para que sus grabaciones sean más profesionales, emplee poco el zoom.

Lado "T": Para telefoto (el motivo aparece más próximo)

Lado "W": Para granangular (el motivo aparece más alejado)



Zooming Speed (Dual speed zooming)

Press the power zoom button firmly for a high-speed zoom, press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, press the "W" side of the power zoom button until the focus is sharp. You can shoot a subject that is at least 80 cm (about 31 1/2 inches) away from the lens surface in the telephoto position, or 1 cm (about 1/2 inches) in the wide-angle position.

Velocidad del zoom (zoom de dos velocidades)

Presione firmemente el botón del zoom para emplear una velocidad alta y suavemente para emplear una velocidad relativamente lenta.

Cuando filme un motivo empleando el zoom de telefoto

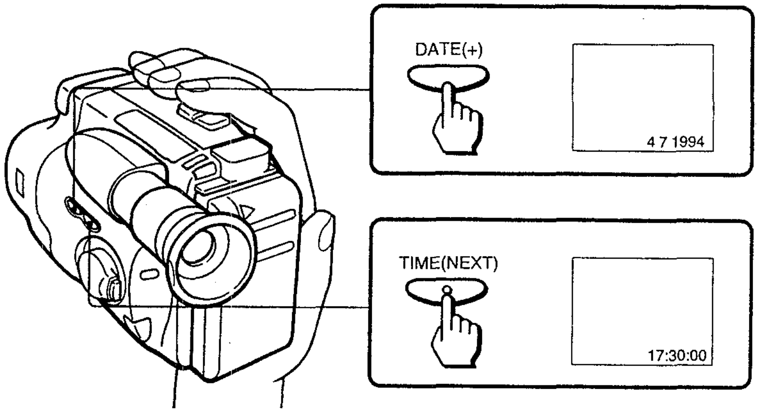
Si no se puede enfocar con nitidez empleando el ajuste mínimo de telefoto, presione el lado "W" del botón del zoom motorizado hasta enfocar bien el motivo. Con telefoto pueden filmarse motivos situados a un mínimo de 80 cm de la superficie del objetivo, con granangular pueden filmarse motivos situados a 1 cm.

Recording the Date or Time

While you are recording, press DATE (+) or TIME (NEXT). The date or time displayed in the viewfinder is recorded with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.

Grabación de la fecha o la hora

Mientras graba, presione DATE (+) o TIME (NEXT). La fecha o la hora visualizadas en el visor se grabarán junto con la imagen. La fecha y la hora no pueden grabarse al mismo tiempo. A excepción de la indicación de la hora o de la fecha, no se grabará ninguna otra indicación del visor.



To Stop Recording with the Date and Time

Press DATE (+) or TIME (NEXT) again. The date or time indicator disappears. The recording continues.

Para parar la grabación con fecha u hora

Vuelva a presionar DATE (+) o TIME (NEXT). La indicación de la fecha o de la hora desaparecerá. La grabación continuará.

Connections for Playback

Conexiones para la reproducción

You can use this camcorder as a VCR by connecting it directly to your TV for playback. There are several ways to connect the camcorder to your TV.

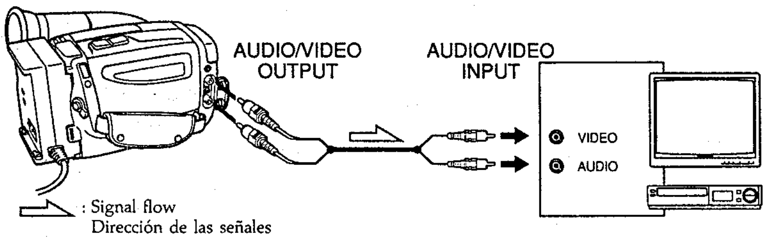
Connecting to a TV or VCR with Audio/Video Input Jacks

Connect the camcorder to the TV using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.

Esta videocámara podrá utilizarse como una videograbadora conectándola directamente a su televisor para hacer la reproducción. Hay varias formas de conectar la videocámara a un televisor.

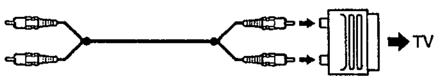
Conexión a un televisor o videograbadora con tomas de entrada de audio/vídeo

Conecte la videocámara al televisor empleando el cable de conexión A/V suministrado. Ponga el selector TV/VCR del TV en VCR.



If your TV has a 21-pin connector (EUROCONNECTOR)
Use the supplied 21-pin adaptor.

Si su televisor tiene un conector de 21 contactos (EUROCONNECTOR)
Emplee el adaptador de 21 contactos suministrado.

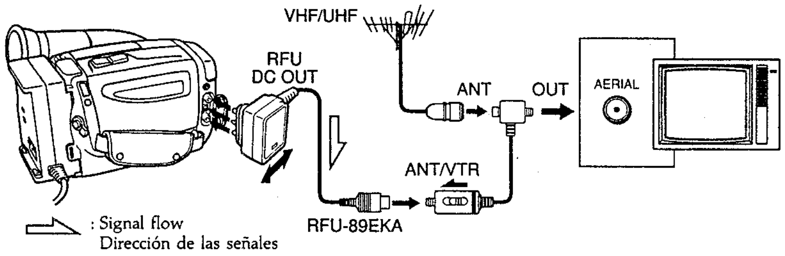


Connecting to a TV without Audio/Video Input Jacks

Connect the camcorder to the TV using an appropriate RFU adaptor such as the RFU-89EKA (not supplied). For details on connection, refer to the instruction manual of the RFU adaptor.
The following illustrates the connection of the RFU-89EKA as an example.

Conexión a un televisor sin tomas de entrada de audio/vídeo

Conecte la videocámara al televisor empleando un adaptador de RFU apropiado tal como el RFU-89EKA (no suministrado). Para detalles sobre la conexión, consulte el manual de instrucciones del adaptador de RFU.
La siguiente illustración muestra la conexión del RFU-89EKA como ejemplo.

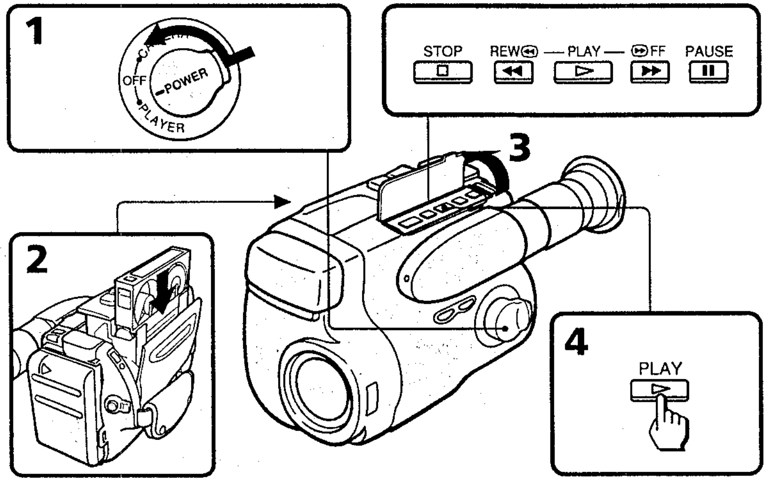


Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR (p. 22, 23).
(1) While pressing the green button of the POWER switch, turn it to PLAYER. **(2)** Insert the recorded tape with the window facing out. **(3)** Open the lid of the control panel. **(4)** Press ▷. Playback starts.

Reproducción de una cinta

La imagen de reproducción puede comprobarse en el visor. La imagen puede comprobarse también en la pantalla de un televisor después de conectar la videocámara a ese televisor o a la videograbadora conectada al televisor (páginas 22, 23).
(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslice el conmutador hasta PLAYER. **(2)** Inserte la cinta grabada con el lado de la ventanilla hacia afuera. **(3)** Abra la tapa del panel de control. **(4)** Pesione ▷. La reproducción comenzará.



To stop playback, press □.
To rewind the tape, press ◀◀.
To fastforward the tape, press ▶▶.

Para parar la reproducción, presione □.
Para rebobinar la cinta, presione ◀◀.
Para que la cinta avance rápidamente, presione ▶▶.

Various Playback Modes

To view a still picture

Press ❚❚ during playback. To resume playback, press ❚❚ or ▷.

To locate a scene (Picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture during fastforward or rewind (Skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

Note on playback

- Streaks appear and the sound is muted in the various playback modes.
- When still picture mode lasts for 5 minutes, the camcorder automatically enters stop mode.

Diversos modos de reproducción

Para ver una imagen fija

Presione ❚❚ durante la reproducción. Para reanudar la reproducción, presione ❚❚ o ▷.

Para localizar una escena (búsqueda de imágenes)

Mantenga presionado ◀◀ o ▶▶ durante la reproducción. Para reanudar la reproducción normal, deje de presionar el botón.

Para comprobar la imagen a alta velocidad durante el avance rápido o el rebobinado (skip scan)

Mantenga presionado ◀◀ mientras se rebobina la cinta o ▶▶ mientras avanza la cinta. Para reanudar la reproducción normal, presione ▷.

Nota sobre la reproducción

- En los "diversos modos de reproducción" aparecen rayas en la imagen y se silencia el sonido.
- Cuando el modo de imagen fija dure más de 5 minutos, la videocámara entrará automáticamente en el modo de parada.

Using Alternate Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p. 6, 7), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V25/V25A (supplied), AC-S10
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-77H/77HD, NP-66/66H, NP-55H
In the car	12 V or 24 V car battery	DCP-77 DC pack

Using House Current

To use the supplied AC-V25/V25A AC power adaptor:
(1) Lift up the viewfinder. **(2)** Connect the AC power cord to a wall outlet. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder. **(3)** Set the selector to VTR (DC OUT).

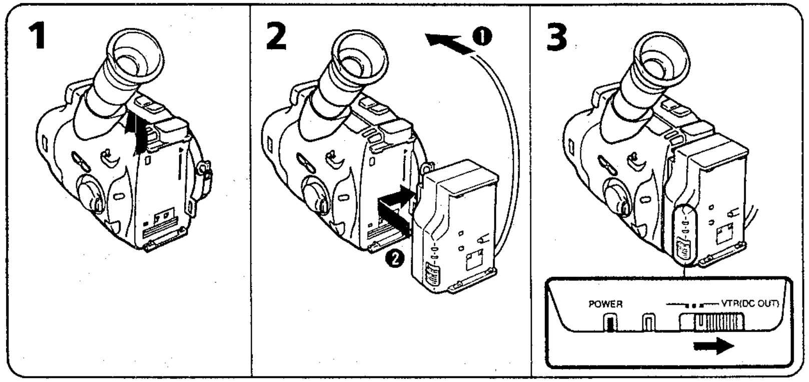
Empleo de fuentes de alimentación alternativas

Con la videocámara podrá utilizarse cualquiera de las fuentes de alimentación siguientes: batería (páginas 6, 7), corriente del hogar y batería de automóvil de 12/24 V. Elija la fuente de alimentación apropiada según el lugar donde vaya a utilizar la videocámara.

Lugar	Alimentación	Accesorios para utilizar
Interiores	Corriente del hogar	Adaptador de CA AC-V25/V25A (suministrado), AC-S10
Exteriores	Batería	Batería NP-55 (suministrada), NP-77H/77HD, NP-66/66H, NP-55H
En un automóvil	Batería de automóvil 12 V o 24 V	Grupo CC DCP-77

Empleo de la corriente del hogar

Para utilizar el adaptador de CA AC-V25/V25A suministrado:
(1) Levante el visor. **(2)** Conecte el cable de alimentación de CA a una toma de la red. Conecte la base del adaptador de CA a la superficie de montaje de la batería de la videocámara. **(3)** Ponga el selector en VTR (DC OUT).



Note on the POWER lamp
- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to VTR (DC OUT) again.

To remove the adaptor
The adaptor is removed in the same way as the battery pack. (p. 9)

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack
The DC pack is removed in the same way as the battery pack. (p. 9)

Options for Charging the Battery Pack

AC-S10 AC power adaptor:
You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.

Nota sobre la lámpara POWER
- La lámpara POWER permanecerá encendida por un rato a pesar de que la unidad esté desenchufada tras emplearla. Esto es normal.
- Si la lámpara POWER no se enciende, ponga el selector en la posición central y desconecte el cable de alimentación. Después de pasar un minuto, vuelva a conectar el cable de alimentación y vuelva a poner el selector en VTR (DC OUT).

Para extraer el adaptador
El adaptador se extrae de igual forma que la batería. (Página 9)

Empleo de una batería de automóvil

Emplee el grupo CC DCP-77 (no suministrado). Conecte el cable del grupo CC al receptáculo para encendedor de cigarrillos de un automóvil (batería de 12 V o 24 V). Conecte el grupo CC a la superficie de montaje de la batería de la videocámara.

Para extraer el grupo CC
El grupo CC se extrae de igual forma que la batería. (Página 9)

Opciones para cargar la batería

Adaptador de CA AC-S10:
Con este adaptador podrá cargarse una batería, tanto si está agotada como si no, porque dispone de una función de descarga.

Editing onto Another Tape

Edición en otra cinta

You can create your own video programme by editing with any other **8** 8 mm, **Hi8** Hi8, **VHS** VHS, **S-VHS** S-VHS, **VHS C** VHSC, **S-VHS C** S-VHSC or **β** Betamax VCR that has audio/video inputs.

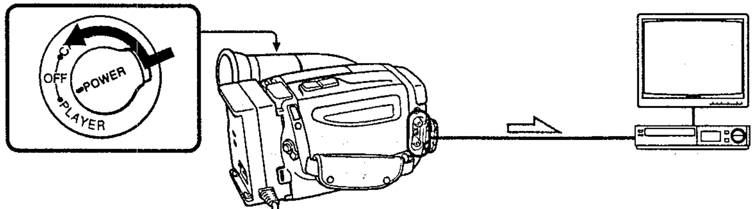
Usted podrá crear sus propios programas de vídeo editando con cualquier otra videograbadora de **8** 8 mm, **Hi8** Hi8, **VHS** VHS, **S-VHS** S-VHS, **VHS C** VHSC, **S-VHS C** S-VHSC o **β** Betamax que disponga de entradas de audio/vídeo.

Before Editing

Connect the camcorder to the VCR using the supplied A/V connecting cable. (p. 22)
Set the input selector on the VCR to LINE, if available. Set the POWER switch to PLAYER.

Antes de editar

Conecte la videocámara a la videograbadora empleando el cable de conexión A/V suministrado. (página 22)
Ponga el selector de entrada de la videograbadora en LINE, si tuviese esa posición. Ponga el conmutador POWER en PLAYER.



⇨ : Signal flow
Dirección de las señales

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR. And insert your recorded tape into the camcorder. **(2)** Play back the tape on the camcorder until you locate the point where you want to start editing, then set the camcorder in the playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in the recording pause mode.
(4) Press ❙❙ on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing Momentarily

Press ❙❙ on the VCR.

To Stop Editing

Press □ on both the camcorder and the VCR.

Inicio de edición

(1) Inserte una cinta sin grabar (o una cinta sobre la que desea grabar) en la videograbadora. Inserte la cinta grabada en la videocámara.
(2) Reproduzca la cinta en la videocámara hasta localizar el punto donde desea iniciar la edición, luego ponga la videocámara en el modo de pausa de reproducción. **(3)** En la videograbadora, localice el punto de inicio de la grabación y póngala en el modo de pausa de grabación.
(4) Presione simultáneamente ❙❙ de la videocámara y de la videograbadora para iniciar la edición.

Para editar más escenas

Repita los pasos 2 a 4.

Para parar momentáneamente la edición

Presione ❙❙ de la videograbadora.

Para parar la edición

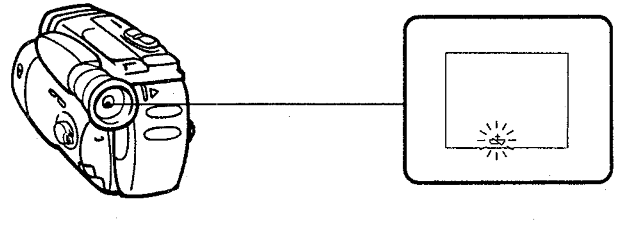
Presione □ de la videocámara y de la videograbadora.

Changing the Lithium Battery

Cambio de la pila de litio

Your camcorder is supplied with a lithium battery installed. The lithium battery lasts for about 1 year under normal operation. When the battery becomes weak or dead, the 🔋 indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**

Con su videocámara se suministra una pila de litio ya instalada. La pila de litio dura aproximadamente un año bajo condiciones de funcionamiento normal. Cuando la pila se debilite o agote, el indicador 🔋 parpadeará en el visor durante unos 5 segundos, al poner el conmutador POWER en CAMERA.
En este caso, **reemplácela por una pila de litio Sony CR2025. El empleo de otras pilas podría suponer un riesgo de incendio o explosión.**

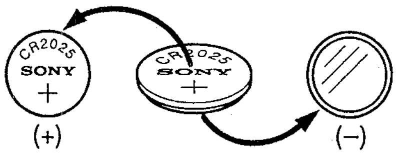


Note on Lithium Battery

The lithium battery has a positive (+) side and a negative (–) side as illustrated below. **Be sure to install the lithium battery with the positive side facing out.**

Nota sobre la pila de litio

La pila de litio tiene un lado positivo (+) y otro negativo (–) como se ilustra a continuación. **Asegúrese de instalar la pila de litio con el lado positivo hacia afuera.**



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution

Keep the lithium battery out of the reach of children.
Should the battery be swallowed, consult a doctor immediately.

AVISO

La pila puede explotar si la trata mal. No la cargue, desarme ni tire al fuego.

Precaución

Mantenga la pila de litio fuera del alcance de los niños.
Si alguien traga la pila, consulte inmediatamente a un médico.

Changing the Lithium Battery

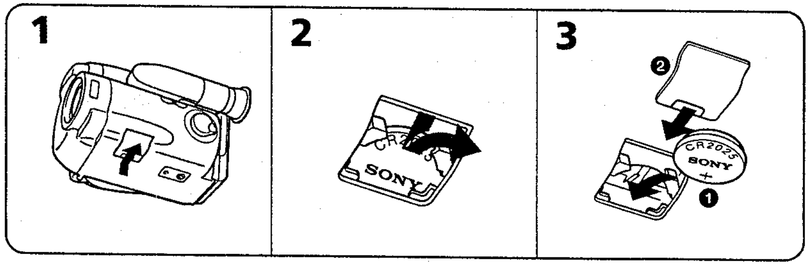
Cambio de la pila de litio

Changing the Lithium Battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date and time.
(1) Detach the lid of the lithium battery compartment on the bottom of the camcorder. **(2)** Push the battery down once and pull it out from the holder. **(3)** Install the lithium battery with the positive (+) side facing out. Replace the lid.

Cambio de la pila de litio

Cuando reemplace la pila de litio, mantenga la batería u otras fuentes de alimentación conectadas. De lo contrario, tendrá que volver a ajustar la fecha y la hora.
(1) Desprenda la tapa del compartimiento de la pila de litio ubicada en la base de la videocámara. **(2)** Empuje la pila hacia abajo una vez y sáquela del portapila. **(3)** Instale la pila de litio con el lado positivo (+) hacia afuera. Coloque la tapa.

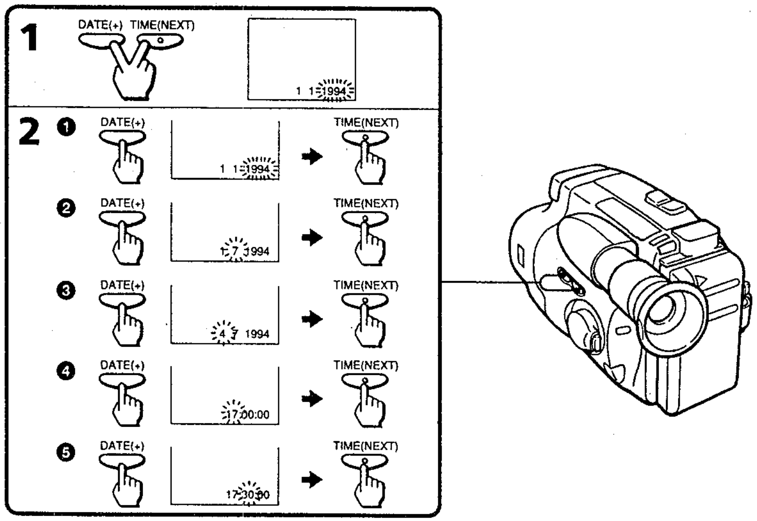


Resetting the Date and Time

Ajuste de la fecha y la hora

The camcorder's clock is set to London time for United Kingdom, and for the other European countries, to Paris time, but you can reset the date and time. Set the POWER switch to CAMERA and turn STANDBY up. Adjust the digits in the viewfinder.
(1) Press DATE (+) and TIME (NEXT) simultaneously until the date appears in the viewfinder. **(2)** Adjust the digits of the year, month, day, hour and minutes by pressing DATE (+) and TIME (NEXT). To set the year to 1994, there is no need to press DATE (+) in 2-❶. Note that when you keep DATE (+) pressed, the digits advance faster.

El reloj de su videocámara ha sido ajustado en fábrica con la hora de Londres para el Reino Unido, y para todos los demás países europeos, con la hora de París, pero usted puede volver a ajustar la fecha y la hora. Ponga el conmutador POWER en CAMERA y gire STANDBY hacia arriba. Ajuste los dígitos en el visor.
(1) Presione simultáneamente DATE (+) y TIME (NEXT) hasta que aparezca la fecha en el visor. **(2)** Ajuste los dígitos del año, mes, día, horas y minutos presionando DATE (+) y TIME (NEXT). Para ajustar el año 1994, no necesita presionar DATE (+) del paso 2-❶. Tenga en cuenta que al mantener presionado DATE (+), los dígitos avanzan rápidamente.



To Correct the Date and Time Settings

Press TIME (NEXT) repeatedly until the minute digits stop flashing. Then repeat steps 1 and 2.

To Check the Preset Date and Time

Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

Para corregir los ajustes de la fecha y la hora

Presione repetidamente TIME (NEXT) hasta que los dígitos de los minutos dejen de parpadear. Luego repita los pasos 1 y 2.

Para comprobar la fecha y la hora preajustadas

Presione DATE (+) o TIME (NEXT). El indicador se apagará al volver a presionar el mismo botón.

Resetting the Date and Time

Note on the setting of the year
When you set the year, each time you press DATE (+) the digits change as follows.

1994 → 1995 → – – –→ 2020
↑________________________|

Ajuste de la fecha y la hora

Nota sobre el ajuste del año
Cuando ajuste el año, cada vez que presione DATE (+), los dígitos cambiarán de la forma siguiente:

1994 → 1995 → – – –→ 2020
↑________________________|

Playback Modes

The playback mode (SP or LP) is selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

LP (long play) mode
When you playback a tape recorded in LP mode, the LP indicator lights up in the viewfinder.
This camcorder cannot record a tape in LP mode.

Foreign 8 mm video
You cannot playback software recorded on a different TV colour system. Because the TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 40 to check the TV colour system of foreign countries.

Modos de reproducción

El modo de reproducción (SP o LP) se selecciona automáticamente según el formato en el que ha sido grabada la cinta. La calidad de la imagen grabada en el modo LP, sin embargo, no será tan buena como la del modo SP.

Modo LP (larga duración)
Cuando reproduzca una cinta grabada en el modo LP, el indicador LP se encenderá en el visor. Esta videocámara no puede grabar una cinta en el modo LP.

Vídeo de 8 mm del extranjero
Las cintas grabadas con otros sistemas de TV en color no podrán ser reproducidas con su videocámara. Como los sistemas de televisión cambian según los países, quizá no pueda reproducir cintas grabadas en el extranjero. Consulte la página 40 para comprobar cuáles son los sistemas de TV en color de otros países del extranjero.

Maintenance Information and Precautions

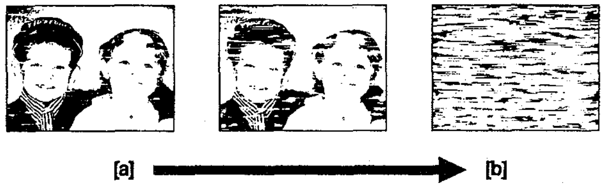
Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.

Información de mantenimiento y precauciones

Limpieza de las cabezas de vídeo

Para asegurar imágenes claras, limpie periódicamente las cabezas de vídeo. Cuando las imágenes reproducidas tengan ruido o apenas se vean, las cabezas de vídeo podrían estar sucias.



[a] Slight contamination
[b] Critical contamination
If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

[a] Contaminación ligera
[b] Contaminación crítica
En tal caso, limpie las cabezas de vídeo con el videocasete de limpieza Sony V8-25CLH (no suministrado). Después de comprobar la imagen, si sigue teniendo ruido, repita la limpieza. (No repita la limpieza más de 5 veces.)

Precaución

No emplee videocasetes de limpieza tipo húmedo de venta en el comercio del ramo porque las cabezas podrían estropearse.

Nota

Si no puede adquirir en su zona el videocasete de limpieza V8-25CLH, consulte a su centro de servicio Sony.

Maintenance Information and Precautions

Información de mantenimiento y precauciones

Removing Dust from inside the Viewfinder

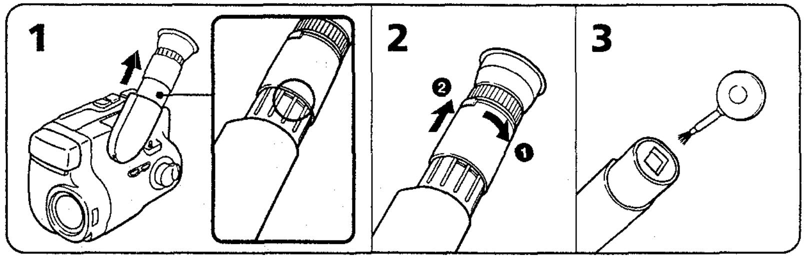
When Using a Monochrome Viewfinder

(1) Pull out the viewfinder barrel until the illustrated mark appears. **(2)** Turn the viewfinder counterclockwise until it stops, and pull it out. **(3)** Clean the surface with a commercially available blower.

Limpieza del polvo del interior del visor

Cuando utilice un visor en blanco y negro

(1) Saque el cuerpo del visor hasta que aparezca la marca mostrada en la ilustración. **(2)** Gire el visor hacia la izquierda hasta que se pare y sáquelo. **(3)** Limpie la superficie con un soplador de aire de venta en el comercio del ramo.

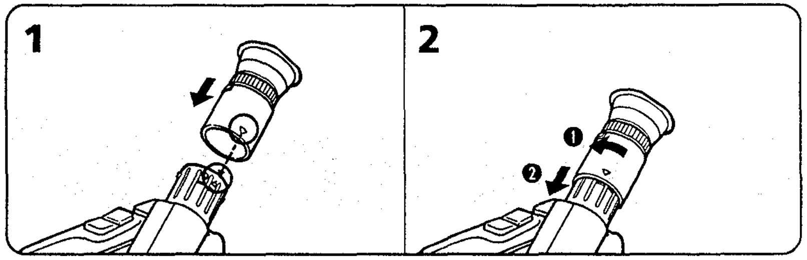


To reattach the viewfinder barrel

(1) Align the mark on the viewfinder barrel with the mark on the viewfinder and push in the viewfinder barrel until it clicks. **(2)** Turn it clockwise until it stops and push it in.

Para volver a colocar el cuerpo del visor

(1) Alinee la marca del visor con la marca del visor y empuje el cuerpo del visor hasta que haga un ruido seco. **(2)** Gírelo hacia la derecha hasta que se pare y métalo.

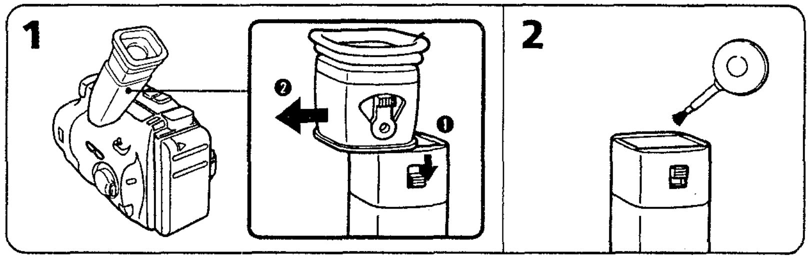


When Using a Colour Viewfinder

(1) While pressing down the hook, slide the viewfinder barrel in the direction of the arrow and remove it from the viewfinder. **(2)** Clean the surface with a commercially available blower.

Cuando utilice un visor en color

(1) Mientras presiona el cierre hacia abajo, deslice el cuerpo del visor en la dirección de la flecha y retírelo del visor. **(2)** Limpie la superficie con un soplador de aire de venta en el comercio del ramo.



To reattach the viewfinder barrel

Slide the viewfinder barrel in the opposite direction of the arrow in the above illustration.

Para volver a colocar el cuerpo del visor

Deslice el cuerpo del visor en la dirección opuesta de la flecha de la ilustración de arriba.

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

(See next page for further information.)

Condensación de humedad

Si traslada directamente la videocámara de un lugar frío a otro cálido, es posible que se condense humedad en su interior, en la superficie de la cinta o en la lente del objetivo. En estas condiciones, la cinta puede adherirse al tambor de cabezas y estropearse, o la videocámara puede no funcionar adecuadamente. Para evitar la posibilidad de que se produzcan fallos en estas circunstancias, la videocámara dispone de sensores de humedad. Sin embargo, tome las precauciones siguientes.

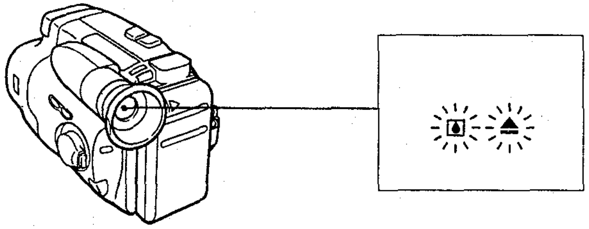
(Vea la página siguiente para más información.)

Maintenance Information and Precautions

Información de mantenimiento y precauciones

Inside the Camcorder

When the 💧 and ▲ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, no other functions except for cassette ejection will work.
Eject the cassette, turn off the camcorder and leave it with the cassette holder open for at least one hour in a dry place.
The camcorder can be used again if the 💧 indicator does not appear when the power is turned on again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when the cassette is inserted and a tape transport button is pressed, the ▲ indicator in the viewfinder flashes. In this case, no other functions except for tape ejection will work.
Eject the cassette, turn off the camcorder and leave it with the cassette holder open for at least one hour in a dry place.
The camcorder can be used again if the ▲ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

En el interior de la videocámara

Cuando parpadeen los indicadores 💧 y ▲ en el visor, se habrá condensado humedad en el interior de la videocámara. En este caso, no funcionará ninguna función de la videocámara excepto la expulsión del videocasete.
Extraiga la cinta, desconecte la alimentación de la videocámara y deje ésta con el portacasete abierto durante una hora como mínimo en un lugar seco.
La videocámara podrá volver a emplearse cuando el indicador 💧 no aparezca al conectar de nuevo la alimentación.

En la superficie de la cinta

Si hay humedad en la superficie de la cinta, cuando se inserte el videocasete y se presione un botón de transporte de la cinta, el indicador ▲ del visor parpadeará. En este caso no funcionará ninguna función, salvo la de expulsión de la cinta. **Expulse la cinta, desconecte la alimentación de la videocámara y deje ésta con el portacasete abierto durante una hora como mínimo en un lugar seco.**
La videocámara podrá volver a utilizarse si el indicador ▲ no aparece al insertar el videocasete y presionar uno de los botones de transporte de la cinta.

On the Lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about one hour.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

Precautions

Camcorder Operation

- Operate the camcorder on 6.0 V (battery pack) or 7.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the LENS COVER switch set to CLOSE when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not drop the camcorder.

En la lente del objetivo

Si se condensa humedad en la lente del objetivo no aparecerán indicadores, pero la imagen perderá intensidad. Desconecte la alimentación y deje reposar la videocámara durante una hora aproximadamente.

Cómo evitar la condensación de humedad

Cuando pase la videocámara de un lugar frío a otro cálido, meta la videocámara en una bolsa de plástico y deje que se adapte a las condiciones de la sala durante cierto periodo de tiempo.

(1) No se olvide de cerrar firmemente la bolsa de plástico en cuyo interior está la videocámara.
(2) Saque la videocámara de la bolsa cuando la temperatura del aire del interior de la bolsa haya alcanzado la temperatura ambiental (después de pasar una hora aproximadamente).

Precauciones

Funcionamiento de la videocámara

- Emplee la videocámara con 6,0 V (batería) o 7,5 V (adaptador de CA).
- Para que funcione con CC o CA, emplee los accesorios recomendados en este manual.
- Si dentro de la videocámara cae algún objeto sólido o líquido, desconecte la fuente de alimentación y haga que sea revisada por personal cualificado antes de seguir manipulándola.
- Evite manejarla con rudeza y los choques mecánicos. Tenga mucho cuidado con el objetivo.
- Mantenga el conmutador LENS COVER en CLOSE cuando no utilice la videocámara.
- No emplee la videocámara envuelta porque podría calentarse.
- Mantenga la videocámara alejada de campos magnéticos intensos o vibraciones mecánicas.
- No deje caer la videocámara.

Maintenance Information and Precautions

Información de mantenimiento y precauciones

On Handling Tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, or if the tab is out or in, etc.

Camcorder Care

- **When the camcorder is not to be used for a long time, disconnect the power source and remove the tape.** Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

AC Power Adaptor

Charging

- **Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.**
- Charge the battery on a flat place without vibration.
- The battery will get hot during charging. But this is normal.

Do not continuously recharge a charged battery pack as that will cause the battery pack efficiency to deteriorate.

Charging temperature

The temperature range for charging is 5°C to 35°C (41°F to 95°F). However, to provide maximum battery efficiency, the recommended temperature range when charging is 10°C to 30°C (50°F to 86°F).

Manipulación de cintas

Nunca inserte nada en los orificios pequeños de la parte posterior del videocasete. Estos orificios se utilizan para averiguar el tipo de cinta, su grosor, si la lengüeta está insertada o no, etc.

Cuidados de la videocámara

- **Cuando no vaya a utilizar la videocámara durante mucho tiempo, desconecte la fuente de alimentación y extraiga la cinta.** Periódicamente, conecte la alimentación, emplee las secciones de la cámara y del reproductor, y reproduzca una cinta durante unos 3 minutos.
- Para eliminar el polvo, limpie la lente del objetivo con un cepillo suave. Si hubiera huellas dactilares en la lente, límpielas con un paño suave.
- Limpie el cuerpo de la videocámara con un paño suave y seco, o con un paño suave ligeramente humedecido en una solución de detergente suave. No emplee ningún tipo de disolvente porque podría estropearse el acabado.

Adaptador de CA

Carga

- **La carga repetida de la batería sin estar ésta completamente descargada reducirá su capacidad. Sin embargo, la capacidad original de la batería podrá recuperarse al emplearla hasta que se agote y al cargarla de nuevo completamente.**
- Cargue la batería en un lugar plano y sin vibraciones.
- La batería se calentará durante la carga. Esto es normal.

No siga cargando una batería que ya está cargada porque su eficacia se reducirá.

Temperatura de carga

La temperatura adecuada para la carga se encuentra entre 5°C y 35°C. Sin embargo, para que la batería ofrezca la máxima eficacia, la gama recomendada de temperaturas de carga se encuentra entre 10°C y 30°C.

Others

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if it has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If it does, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock nor drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- While the unit is in use, it gets hot. But this is normal.
- Do not place the unit in locations where it is;
  - – Extremely hot or cold
  - – Dusty or dirty
  - – Very humid
  - – Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Otras medidas de precaución

- Desenchufe la unidad de la toma de corriente cuando no vaya a emplearla durante mucho tiempo. Para desconectar el cable de alimentación de la red, tire del enchufe. Nunca tire del propio cable.
- No emplee la unidad si tiene un cable estropeado o si se ha caído o estropeado.
- No doble a la fuerza el cable de alimentación de CA, tampoco ponga objetos pesados sobre él. En estos casos, el cable podría estropearse y causar un incendio o una sacudida eléctrica.
- Asegúrese de que nada metálico entre en contacto con las partes metálicas de la placa de conexión. En caso contrario, podría producirse un cortocircuito y la unidad se estropearía.
- Mantenga siempre limpios los contactos metálicos.
- No desmonte la unidad.
- Evite los golpes mecánicos y no deje caer la unidad.
- Mientras emplea la unidad, y particularmente durante la carga, manténgala alejada de receptores de AM y equipos de vídeo porque la recepción de AM y el funcionamiento de los equipos de vídeo no será adecuado.
- La unidad se calienta mientras se emplea. Esto es normal.
- No ponga la unidad en los lugares siguientes:
  - – Donde haga mucho frío o calor
  - – Donde haya polvo o suciedad
  - – Donde haya mucha humedad
  - – Donde haya vibraciones

Si se produce alguna dificultad, desenchufe la unidad y póngase en contacto con su concesionario Sony más cercano.

Using Your Camcorder Abroad

Each country has its own electricity and TV colour system. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Difference in Colour Systems

This camcorder is a PAL system based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV or a SECAM system based TV with a PAL/SECAM transcoder.
Check the following list.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, former West Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Empleo de la videocámara en el extranjero

Cada país tiene su sistema de suministro eléctrico y sistema de televisión en color. Antes de emplear la videocámara en el extranjero, compruebe los puntos siguientes.

Fuentes de alimentación

Usted podrá utilizar su videocámara en cualquier país con el adaptador de CA suministrado dentro del margen de 110 V a 240 V CA, 50/60 Hz.

Diferencia en los sistemas de color

Esta videocámara se basa en el sistema PAL. Si desea ver la imagen reproducida en un televisor, éste deberá ser un televisor basado en el sistema PAL, o un televisor basado en el sistema SECAM que disponga de un transcodificador PAL/SECAM.
Compruebe la lista siguiente:

Países con el sistema PAL
Australia, Austria, Bélgica, China, Dinamarca, Finlandia, antigua R.D.A., Gran Bretaña, Holanda, Hong Kong, Italia, Kuwait, Malasia, Nueva Zelanda, Noruega, Portugal, Singapur, España, Suecia, Suiza, Tailandia, etc.

País con el sistema PAL-M
Brasil

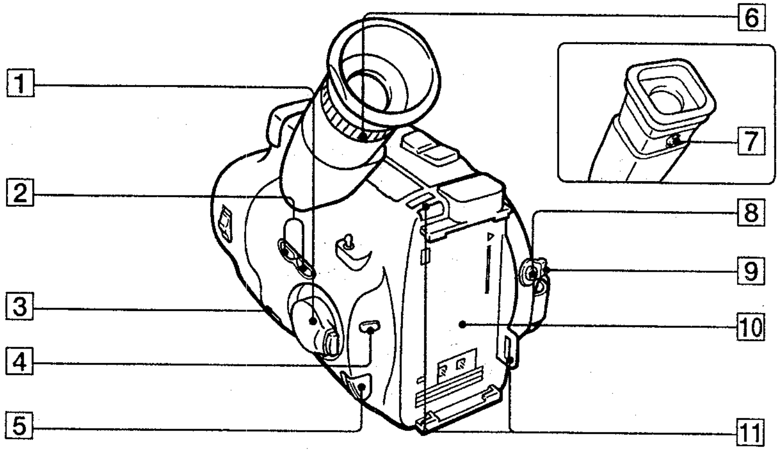
Países con el sistema PAL-N
Argentina, Paraguay, Uruguay

Países con el sistema NTSC
Islas Bahamas, Bolivia, Canadá, Centroamérica, Chile, Colombia, Ecuador, Jamaica, Japón, Corea, México, Perú, Surinam, Taiwan, Filipinas, EE.UU, Venezuela, etc.

Países con el sistema SECAM
Bulgaria, Francia, Guyana, Hungría, Irán, Iraq, Mónaco, Polonia, antigua Unión Soviética, etc.

Identifying the Parts

Identificación de partes

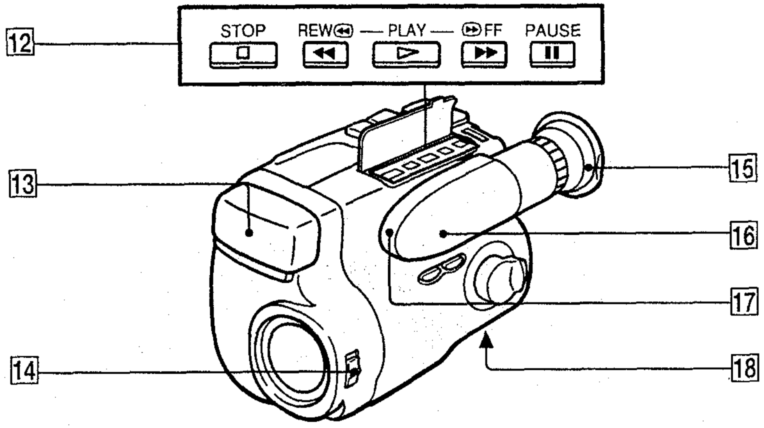


1 **POWER switch** (p. 17, 24)
2 **DATE (+) and TIME (NEXT) buttons** (p. 31)
3 **Lithium battery compartment (bottom of the Camcorder)** (p. 30)
4 **COUNTER RESET button** (p. 18)
5 **BATT (battery eject) knob** (p. 9)
6 **Viewfinder lens adjustment ring** (p. 14)
7 **Viewfinder lens adjustment lever** (p. 14)
8 **START/STOP button** (p. 17)
9 **STANDBY switch** (p. 17)
10 **Battery mounting surface** (p. 9)
11 **Hooks for shoulder strap**

1 **Conmutador de alimentación (POWER)** (Páginas 17, 24)
2 **Botones de la fecha y de la hora (DATE (+) y TIME (NEXT))** (Página 31)
3 **Compartimiento de la pila de litio (en la base de la videocámara)** (Página 30)
4 **Botón de puesta a cero del contador (COUNTER RESET)** (Página 18)
5 **Pomo de expulsión de la batería (BATT)** (Página 9)
6 **Anillo de ajuste de la lente del visor** (Página 14)
7 **Palanquilla de ajuste de la lente del visor** (Página 14)
8 **Botón de inicio/parada (START/STOP)** (Página 17)
9 **Conmutador de puesta en espera (STANDBY)** (Página 17)
10 **Superficie de montaje de la batería** (Página 9)
11 **Ganchos para la correa de bandolera**

Identifying the Parts

Identificación de partes



12 **Tape transport buttons** (p. 24)
□ STOP
◀◀ REW (rewind)
▷ PLAY (playback)
▶▶ FF (fastforward)
❚❚ PAUSE

13 **Built-in microphone**

14 **LENS COVER switch**

15 **Eyecup**

16 **Viewfinder** (p. 14)

17 **Camera recording/battery lamp**

18 **Tripod receptacle** (p. 16)

12 **Botones de transporte de la cinta** (Página 24)
□ STOP (parada)
◀◀ REW (rebobinado)
▷ PLAY (reproducción)
▶▶ FF (avance rápido)
❚❚ PAUSE (pausa)

13 **Micrófono incorporado**

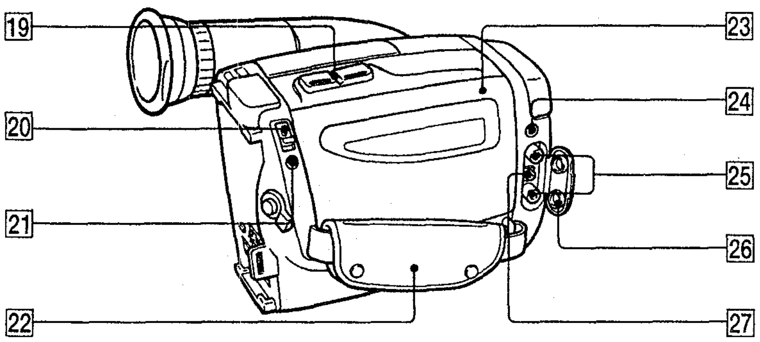
14 **Conmutador de la tapa del objetivo (LENS COVER)**

15 **Ocular**

16 **Visor** (Página 14)

17 **Lámpara de grabación con videocámara/estado de la batería**

18 **Receptáculo para el trípode** (Página 16)



19 **Power zoom button** (p. 20)

20 **EJECT knob** (p. 13)

21 **REMOTE Ⓛ (LANC) control jack**
Ⓛ stands for Local Application Control Bus System. The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

22 **Grip strap** (p. 15)

23 **Cassette holder** (p. 13)

24 **MIC jack (PLUG IN POWER)**
Connect an optional external microphone (stereo or monaural). This jack also accepts a "plug-in-power" microphone.

25 **Audio/Video output jacks** (p. 22)

26 **Jack cover**

27 **RFU DC OUT (RFU adaptor DC output) jack** (p. 23)

19 **Botón del zoom motorizado** (Página 20)

20 **Pomo de expulsión (EJECT)** (Página 13)

21 **Toma para control remoto (REMOTE Ⓛ (LANC))**
Ⓛ significa Sistema de Bus de Control de Aplicación Local. La toma de control Ⓛ se emplea para controlar el transporte de la cinta del equipo de vídeo y de los equipos periféricos conectados a él. Esta toma tiene la misma función que la toma señalada como CONTROL L o REMOTE.

22 **Correa de la empuñadura** (Página 15)

23 **Compartimiento del videocasete** (Página 13)

24 **Toma de micrófono (MIC) (encendido automático al conectar) (PLUG IN POWER)**
Conecte a esta toma un micrófono externo opcional (estereofónico o monofónico). En esta toma puede conectarse también un micrófono de "encendido automático al conectar".

25 **Tomas de salida de audio/vídeo** (Página 22)

26 **Tapa de tomas**

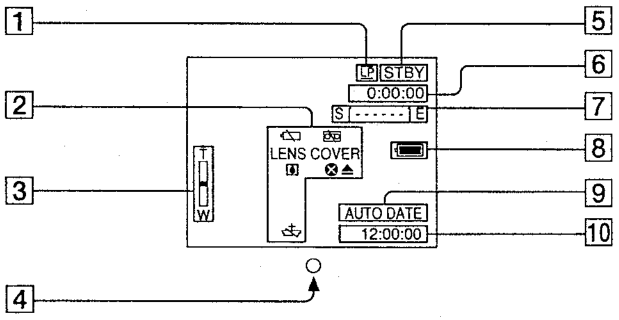
27 **Toma de salida de CC del adaptdor de RFU (RFU DC OUT)** (Página 23)

Operation Indicators

For details on each indicator, refer to the pages indicated in the parentheses.

Indicadores de operación

Para obtener detalles de cada indicador, consulte las páginas indicadas entre paréntesis.



1 Lights up when playing back a tape recorded in LP mode

2 Warning indicators (p. 53)

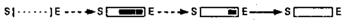
3 Power zoom indicator (p. 20)

4 Recording lamp/Battery lamp

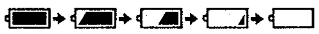
5 Tape transport mode (p. 18)

6 Tape counter (p. 18)

7 Remaining tape length indicator



8 Remaining battery indicator (p. 10)



9 AUTO DATE indicator (p. 17)

10 Date or Time (p. 31)

1 Se enciende cuando se reproduce una cinta grabada en el modo LP.

2 Indicadores de aviso (Página 53)

3 Indicador del zoom motorizado (Página 20)

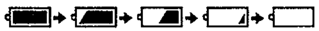
4 Lámpara de grabación/estado de la batería

5 Modo de transporte de la cinta (Página 18)

6 Contador de cinta (Página 18)

7 Indicador de cinta restante

8 Indicador del estado de la batería (Página 10)



9 Indicador AUTO DATE (Página 17)

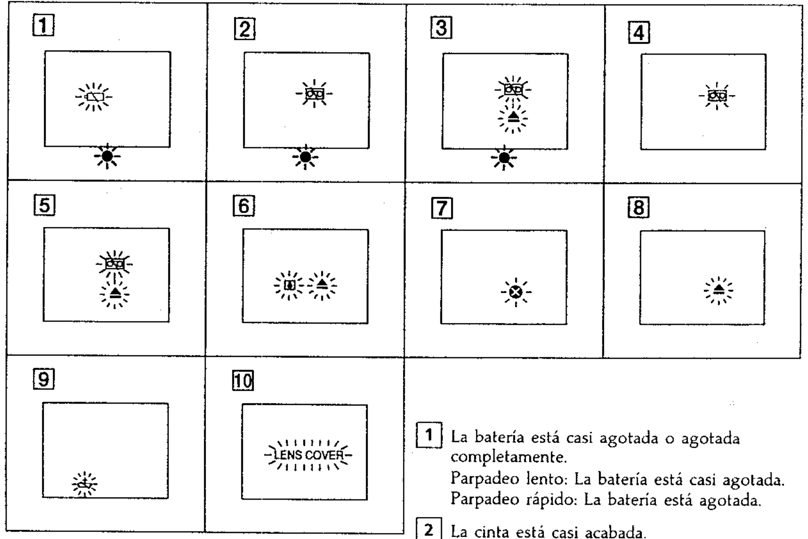
10 Fecha u hora (Página 31)

Indicators in the Viewfinder

Indicadores del visor

Warning Indicators

If indicators flash in the viewfinder or a caution lamp on the camcorder flashes, check the following:



1 The battery is weak or dead.
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 The tape is near the end.
The flashing is slow.

3 The tape has run out.
The flashing becomes rapid.

4 No tape has been inserted.

5 The tab on the tape is out (red).

6 Moisture condensation has occurred. (p. 36)

7 The video heads may be contaminated. (p. 33)

8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.

9 The lithium battery is weak or is not installed. (p. 29)

10 The LENS COVER switch is set to CLOSE.

Indicadores de aviso

Si los indicadores parpadean en el visor, o si parpadea una lámpara de aviso en la videocámara, compruebe lo siguiente:

1 La batería está casi agotada o agotada completamente.
Parpadeo lento: La batería está casi agotada.
Parpadeo rápido: La batería está agotada.

2 La cinta está casi acabada.
El parpadeo es lento.

3 La cinta ha llegado al final.
El parpadeo es más rápido.

4 No se ha introducido una cinta.

5 La lengüeta de la cinta está deslizada (puede verse el color rojo).

6 Se ha producido condensación. (Página 36)

7 Las cabezas de vídeo pueden estar sucias. (Página 33)

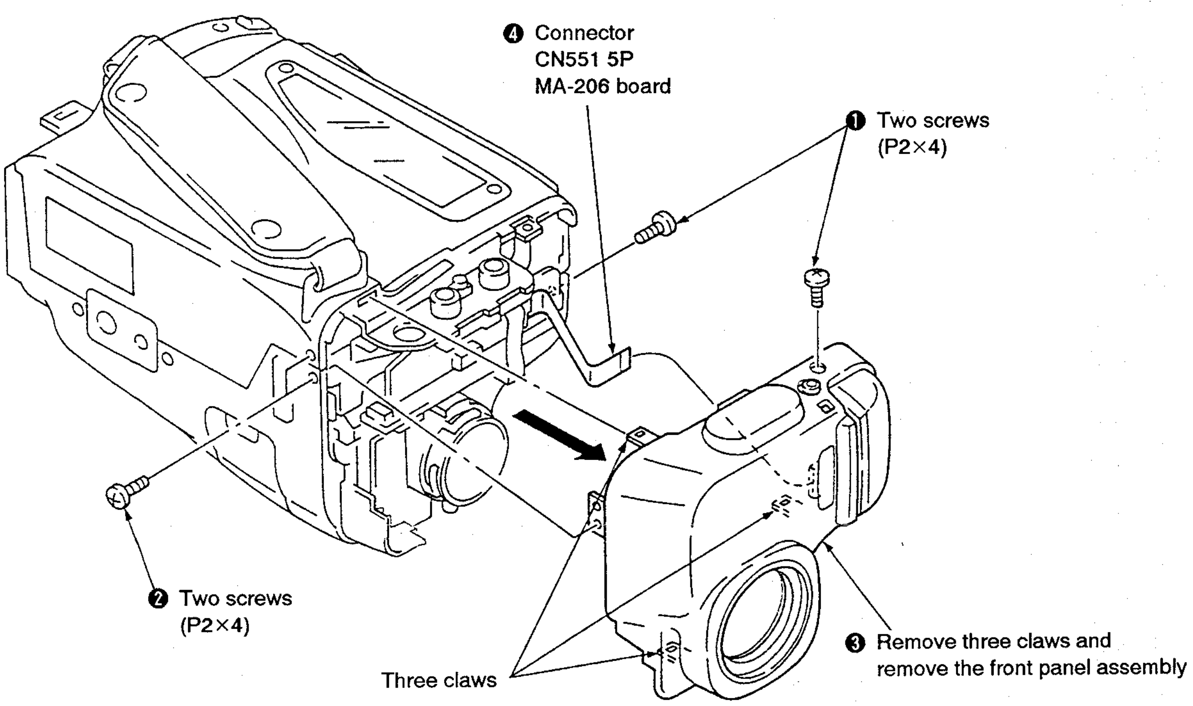
8 Se ha producido otro problema.
Desconecte la fuente de alimentación y póngase en contacto con su concesionario Sony o con el centro de reparaciones autorizado por Sony más cercano.

9 La pila de litio está agotada o no ha sido instalada. (Página 29)

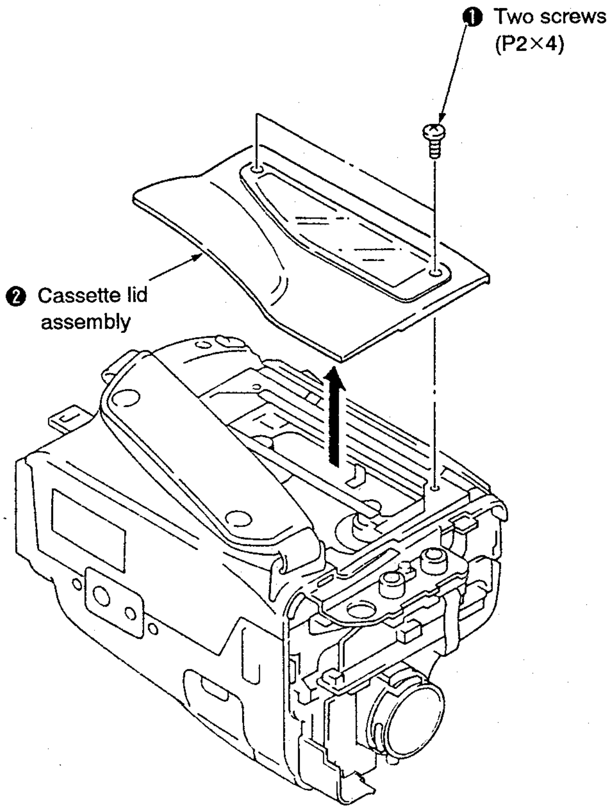
10 El conmutador LENS COVER está en CLOSE.

SECTION 2
DISASSEMBLY

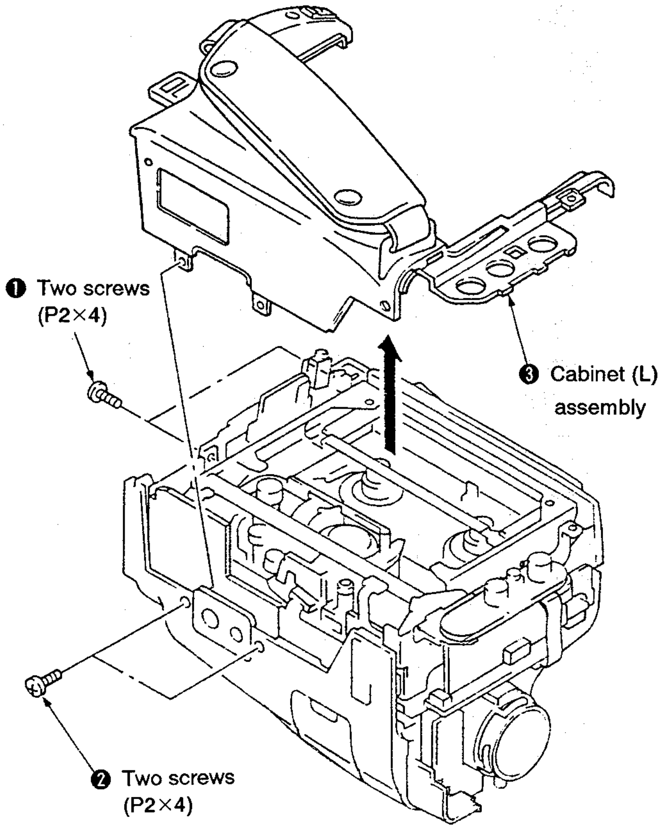
2-1. REMOVAL OF FRONT PANEL ASSEMBLY


❹ Connector
CN551 5P
MA-206 board
❶ Two screws
(P2×4)
❷ Two screws
(P2×4)
Three claws
❸ Remove three claws and
remove the front panel assembly

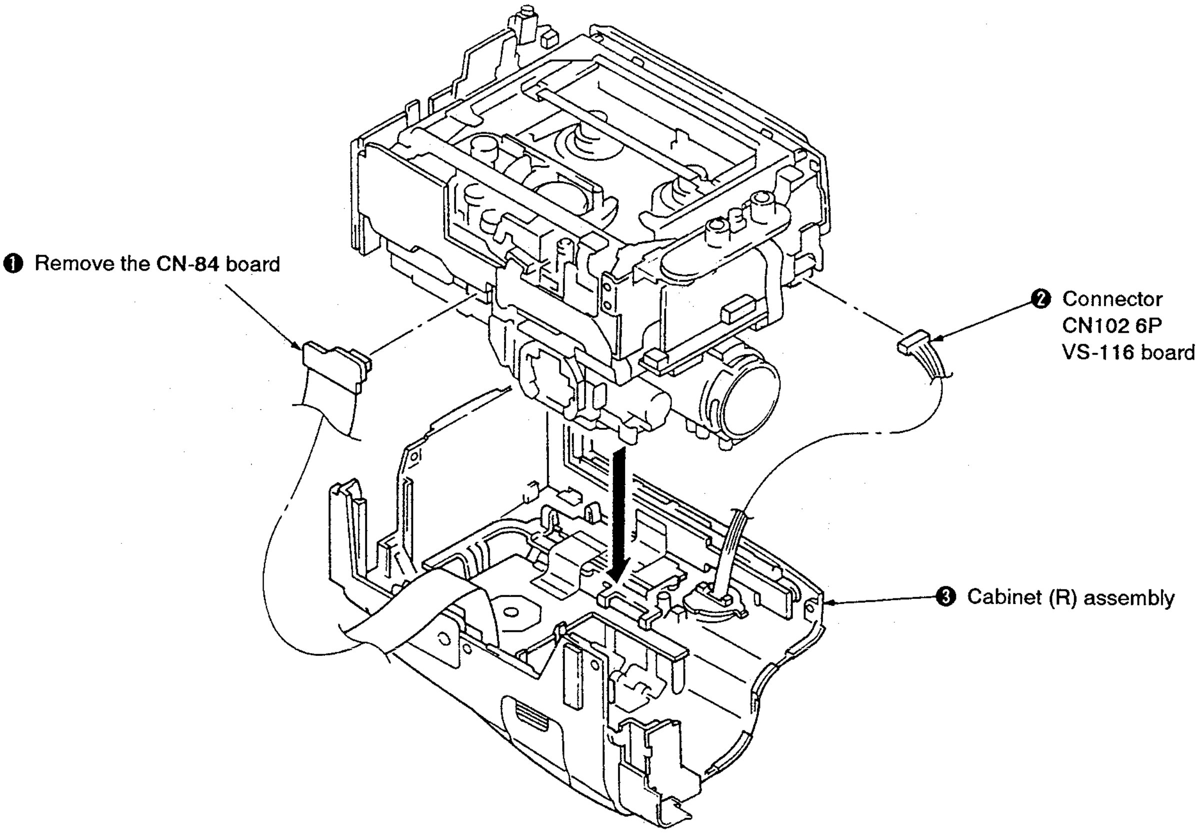
2-2. REMOVAL OF CASSETTE LID ASSEMBLY


❶ Two screws
(P2×4)
❷ Cassette lid
assembly

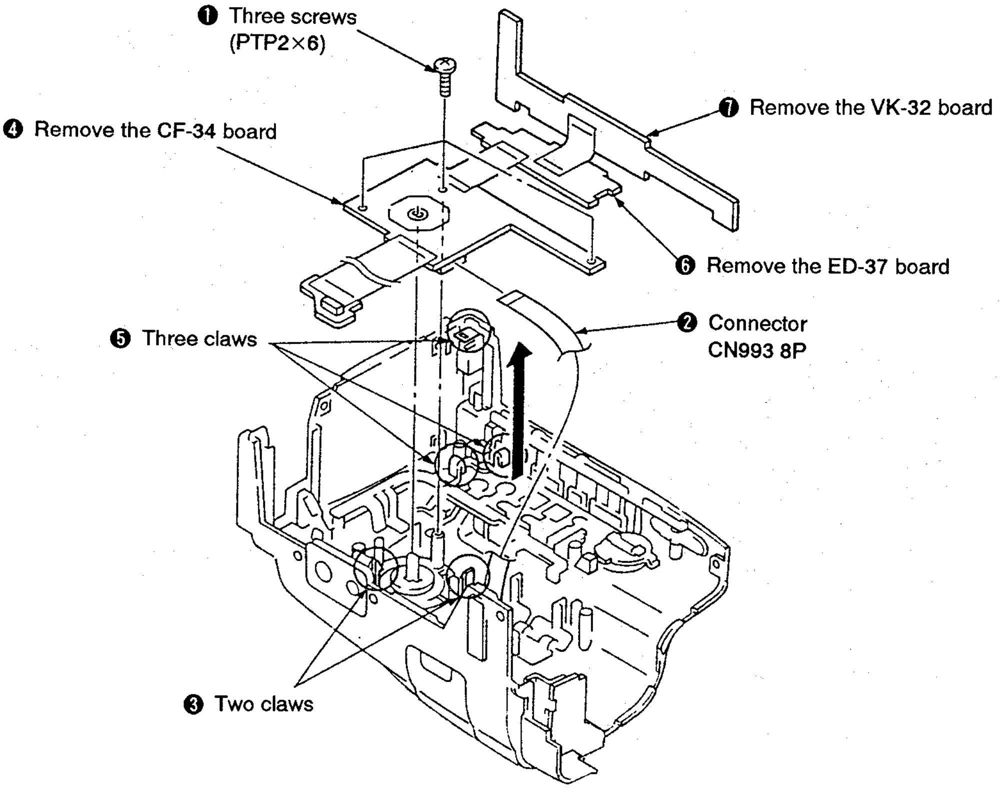
2-3. REMOVAL OF CABINET (L) ASSEMBLY


❶ Two screws
(P2×4)
❷ Two screws
(P2×4)
❸ Cabinet (L)
assembly

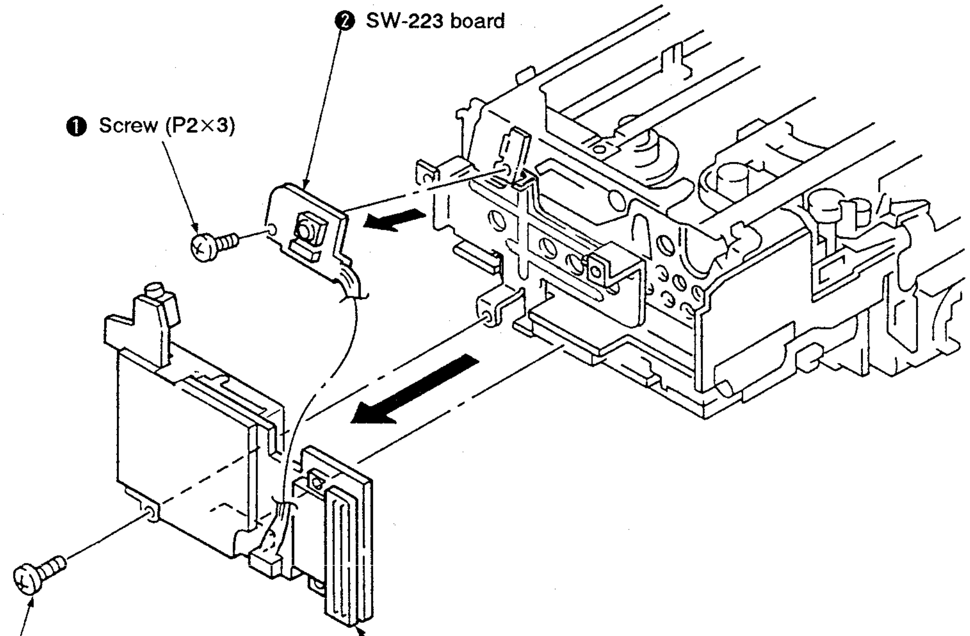
2-4. REMOVAL OF CABINET (R) ASSEMBLY


❶ Remove the CN-84 board
❷ Connector
CN102 6P
VS-116 board
❸ Cabinet (R) assembly

2-5. REMOVAL OF CF-34, ED-37 AND VK-32 BOARDS


❶ Three screws
(PTP2×6)
❼ Remove the VK-32 board
❹ Remove the CF-34 board
❻ Remove the ED-37 board
❷ Connector
CN993 8P
❺ Three claws
❸ Two claws

2-6. REMOVAL OF DD-67 AND SW-223 BOARDS



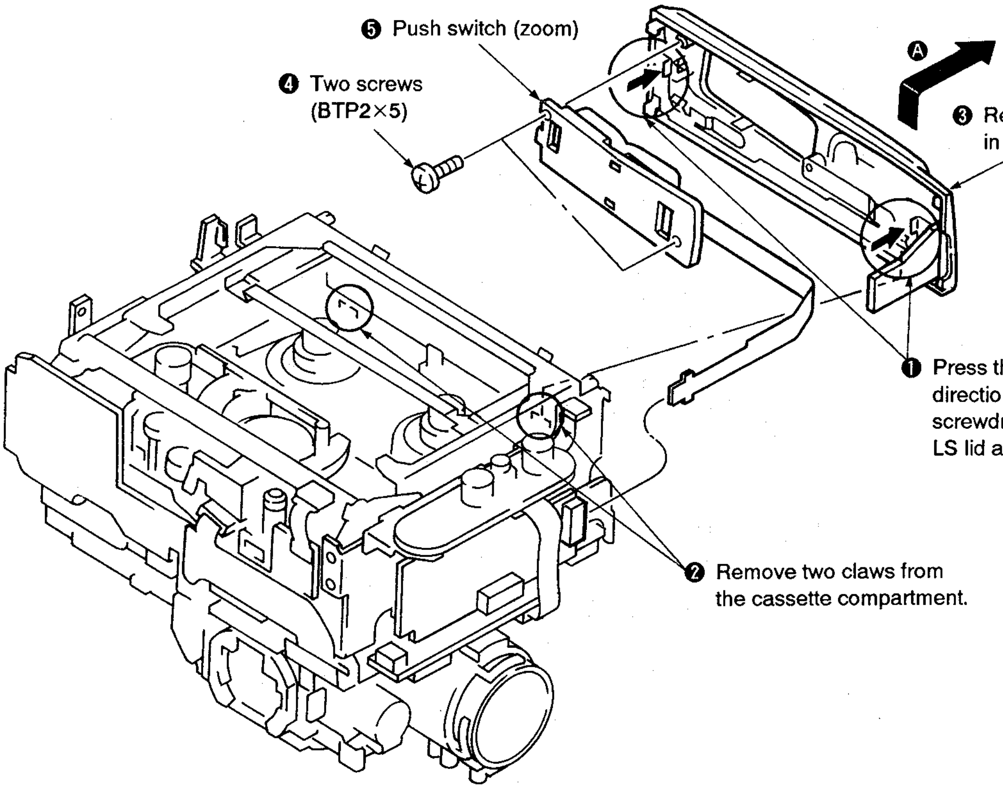
❶ Screw (P2×3)

❷ SW-223 board

❸ Screw (P2×3)

❹ DD-67 board

2-7. REMOVAL OF LS LID ASSEMBLY



❶ Press the two claws in the arrow direction with the precision screwdriver, etc. so that the LS lid assembly rises up slightly.

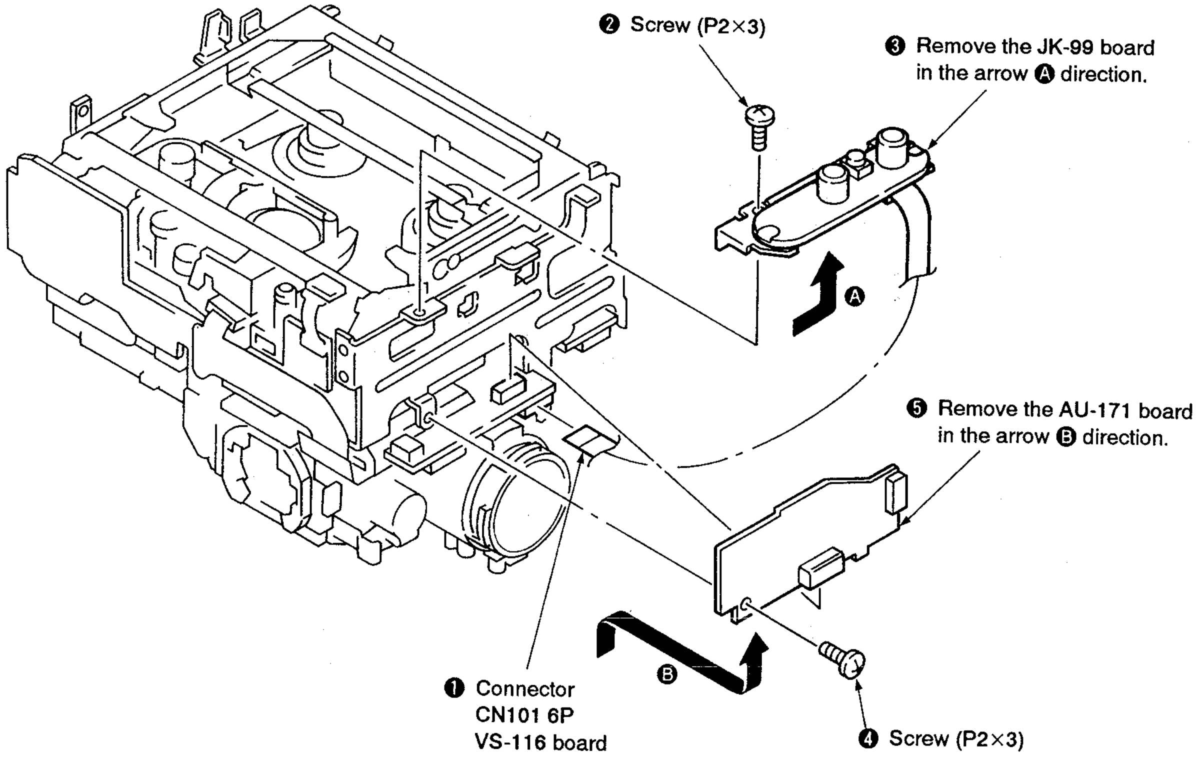
❷ Remove two claws from the cassette compartment.

❸ Remove the LS lid assembly in the arrow Ⓐ direction.

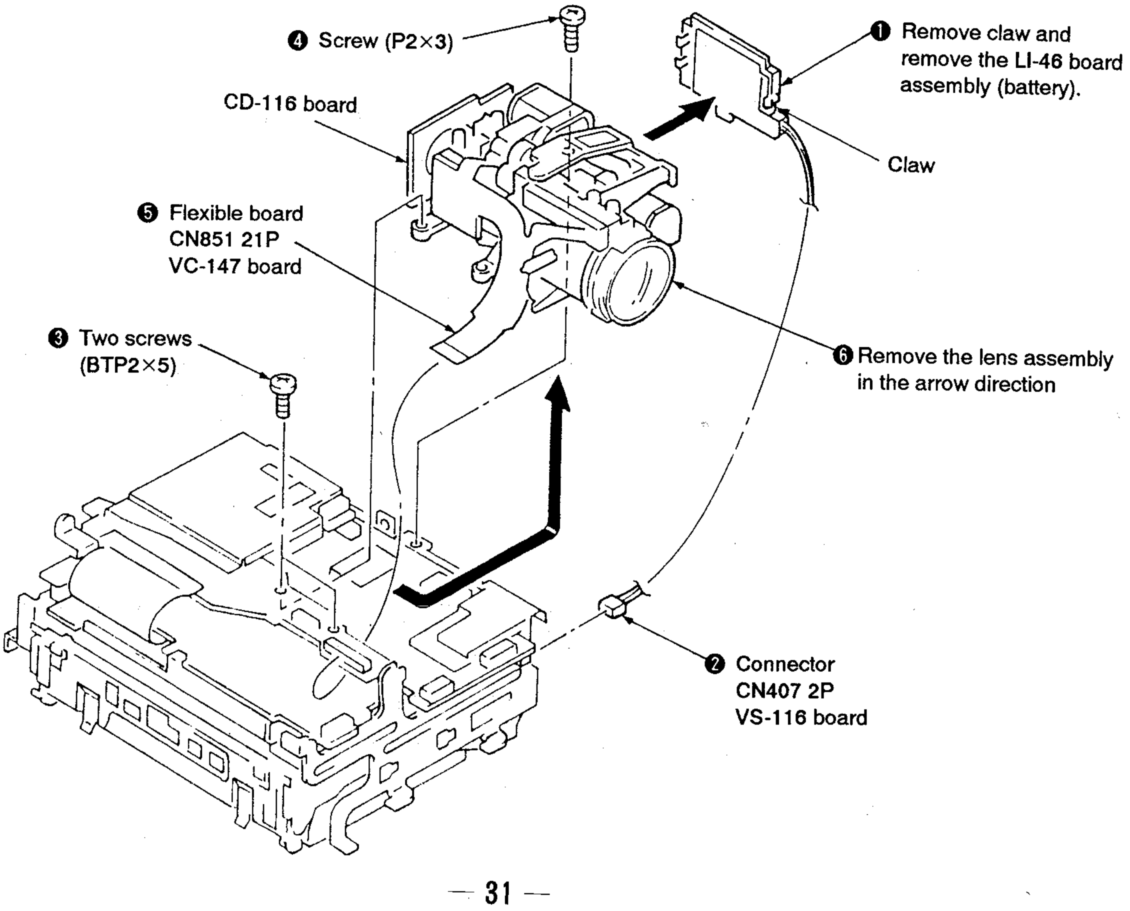
❹ Two screws (BTP2×5)

❺ Push switch (zoom)

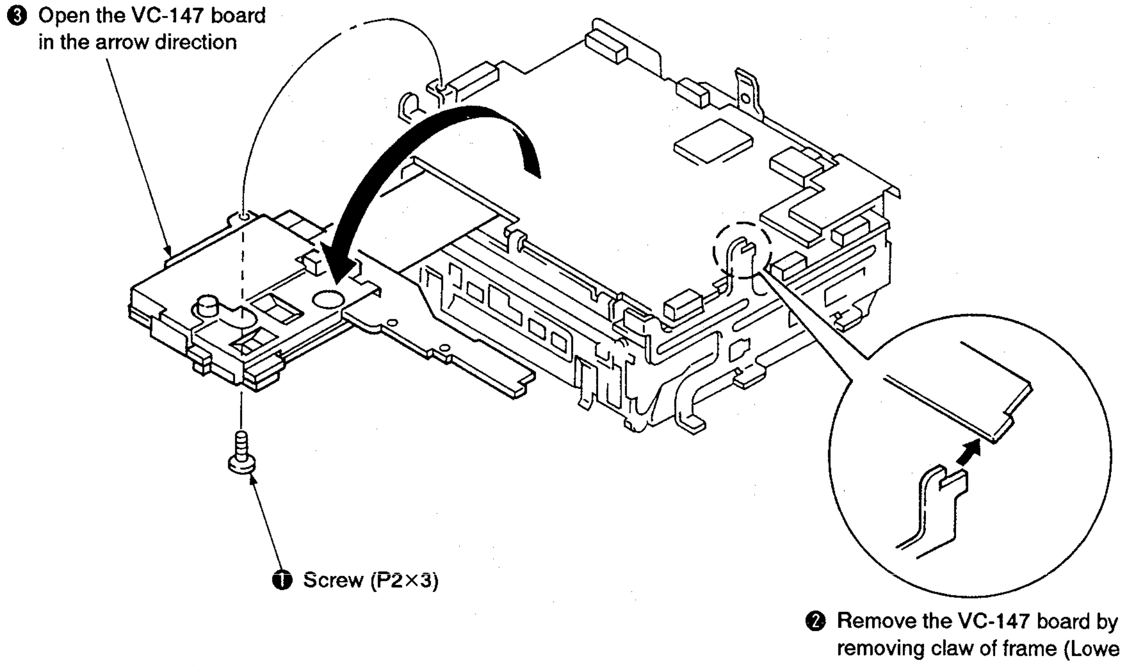
2-8. REMOVAL OF JK-99 AND AU-171 BOARDS


❷ Screw (P2×3)
❸ Remove the JK-99 board in the arrow Ⓐ direction.
Ⓐ
❺ Remove the AU-171 board in the arrow Ⓑ direction.
Ⓑ
❶ Connector CN101 6P VS-116 board
❹ Screw (P2×3)

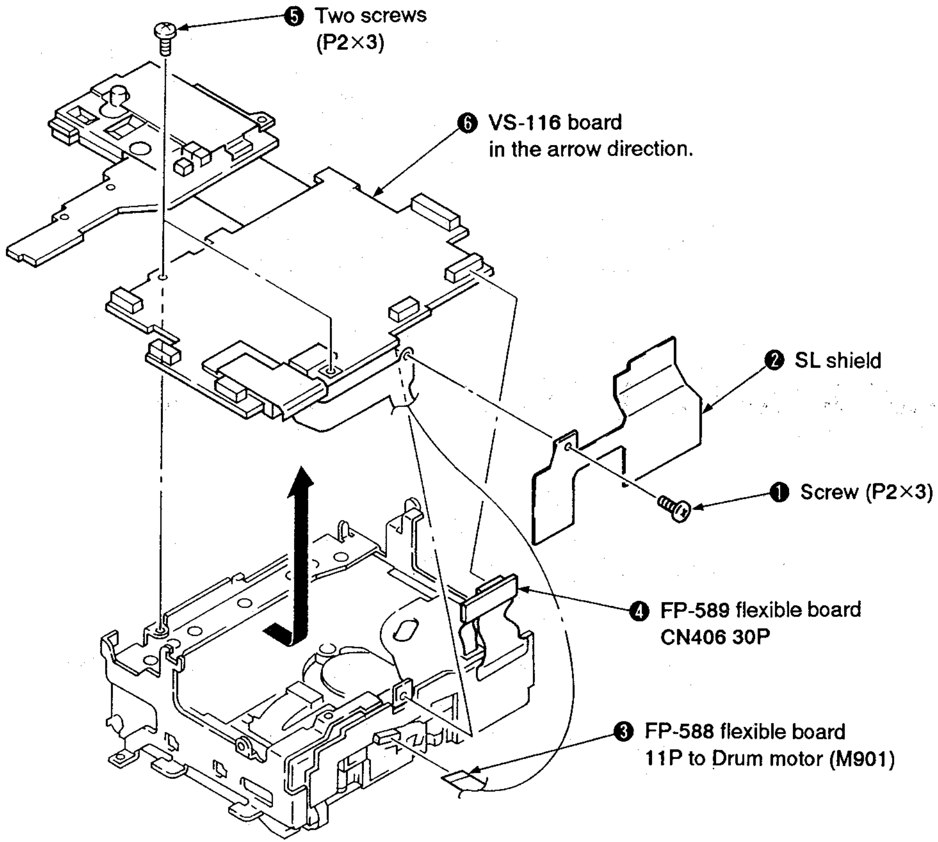
2-9. REMOVAL OF LENS ASSEMBLY (CD-116 BOARD)


❹ Screw (P2×3)
CD-116 board
❶ Remove claw and remove the LI-46 board assembly (battery).
Claw
❺ Flexible board CN851 21P VC-147 board
❸ Two screws (BTP2×5)
❻ Remove the lens assembly in the arrow direction
❷ Connector CN407 2P VS-116 board

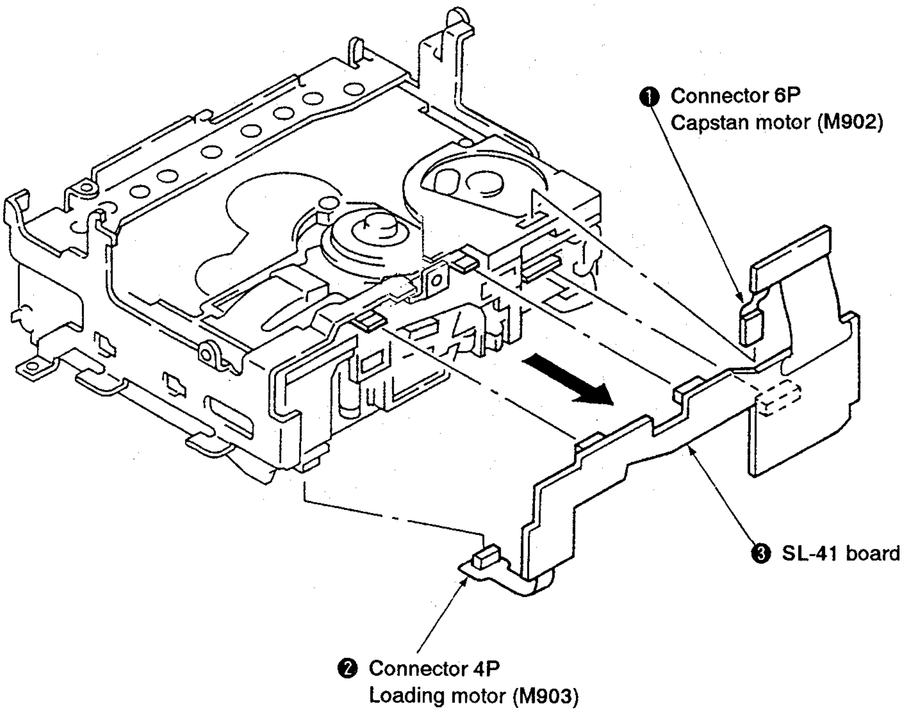
2-10. OPENING OF VC-147 BOARD


❸ Open the VC-147 board
in the arrow direction
❶ Screw (P2×3)
❷ Remove the VC-147 board by
removing claw of frame (Lower)

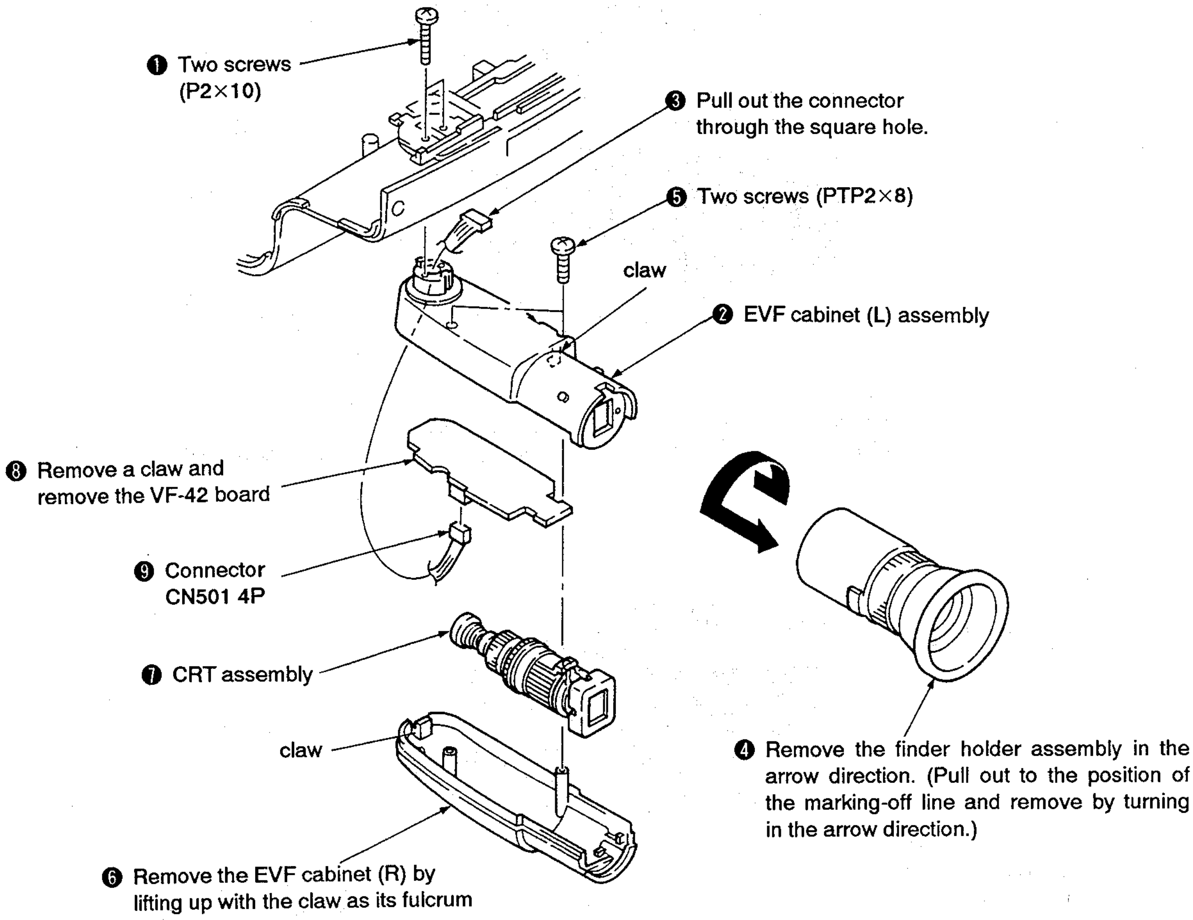
2-11. REMOVAL OF VS-116 BOARD


❺ Two screws
(P2×3)
❻ VS-116 board
in the arrow direction.
❷ SL shield
❶ Screw (P2×3)
❹ FP-589 flexible board
CN406 30P
❸ FP-588 flexible board
11P to Drum motor (M901)

2-12. REMOVAL OF SL-41 BOARD

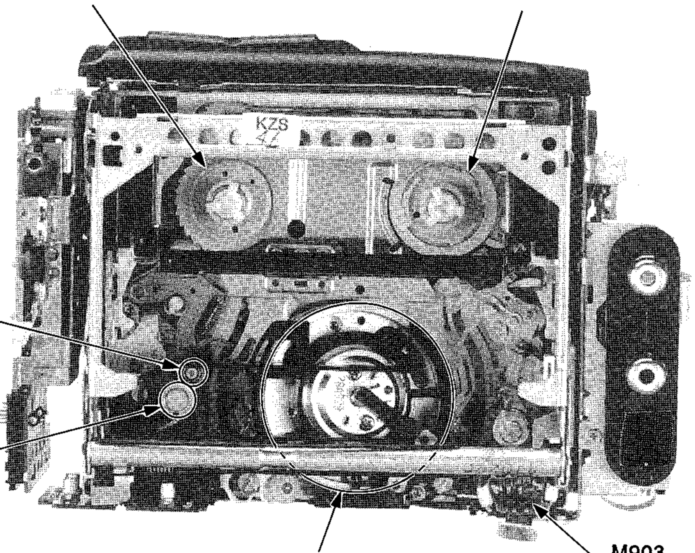

❶ Connector 6P
Capstan motor (M902)
❸ SL-41 board
❷ Connector 4P
Loading motor (M903)

2-13. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)


❶ Two screws
(P2×10)
❸ Pull out the connector
through the square hole.
❺ Two screws (PTP2×8)
claw
❷ EVF cabinet (L) assembly
❽ Remove a claw and
remove the VF-42 board
❾ Connector
CN501 4P
❼ CRT assembly
claw
❹ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)
❻ Remove the EVF cabinet (R) by
lifting up with the claw as its fulcrum

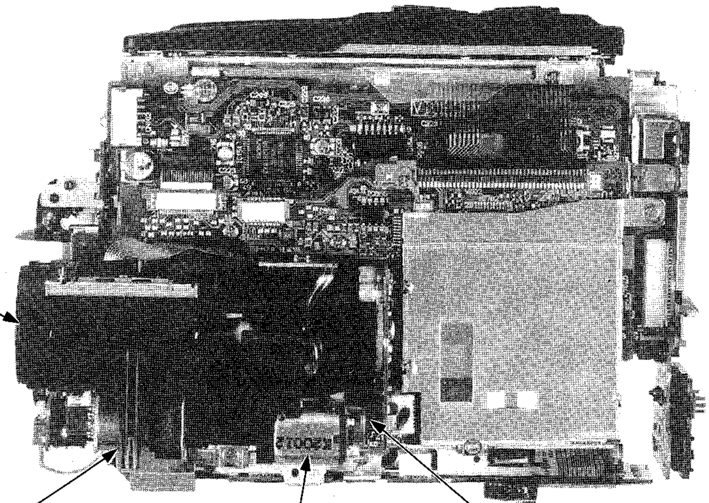
2-14. INTERNAL VIEWS

— Left side —

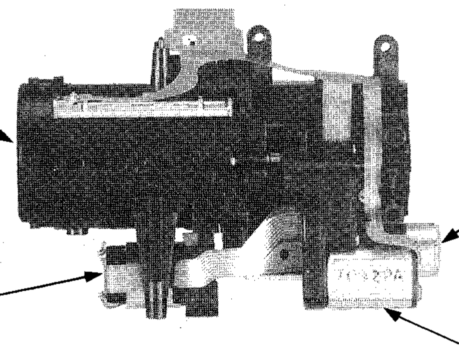

T reel table assembly
X-3941-274-1
S reel table assembly
X-3943-676-1
Pinch roller
M902
Capstan motor (SCE-0101A)
8-835-477-01
M901
Drum assembly (DGH-90A-R)
A-7048-585-A
Upper drum assembly (DGR-90-R)
A-7049-521-A
M903
Loading motor assembly
A-7040-304-A

— Right side —

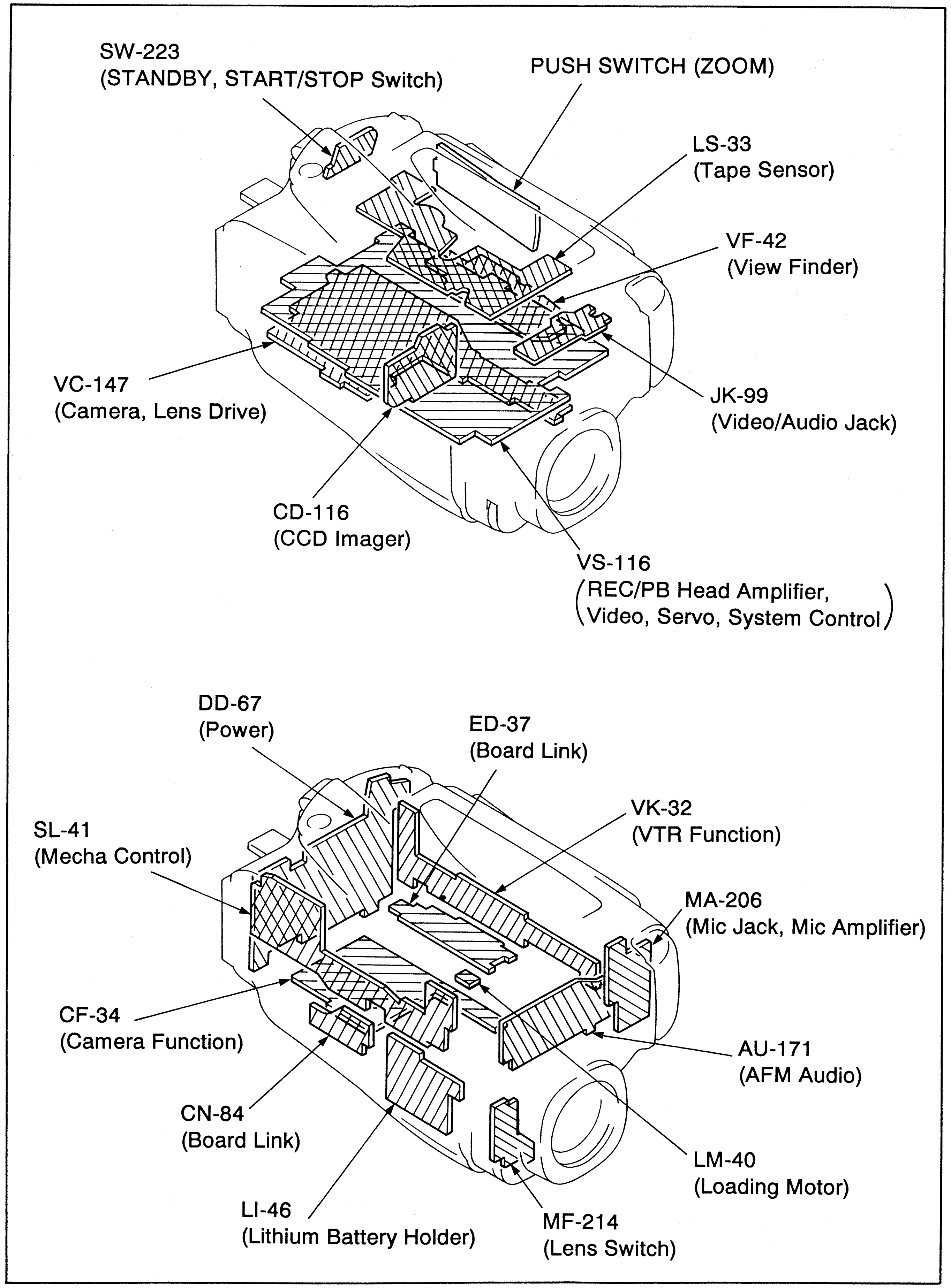
TYPE A


Zoom lens (VCL-6210WC)
1-547-548-11 (TYPE A)
M904
IRIS meter assembly
3-708-494-11 (TYPE A)
M906
Zoom motor assembly
3-708-492-01 (TYPE A)
M905
Focus motor assembly
3-708-491-01 (TYPE A)

TYPE B

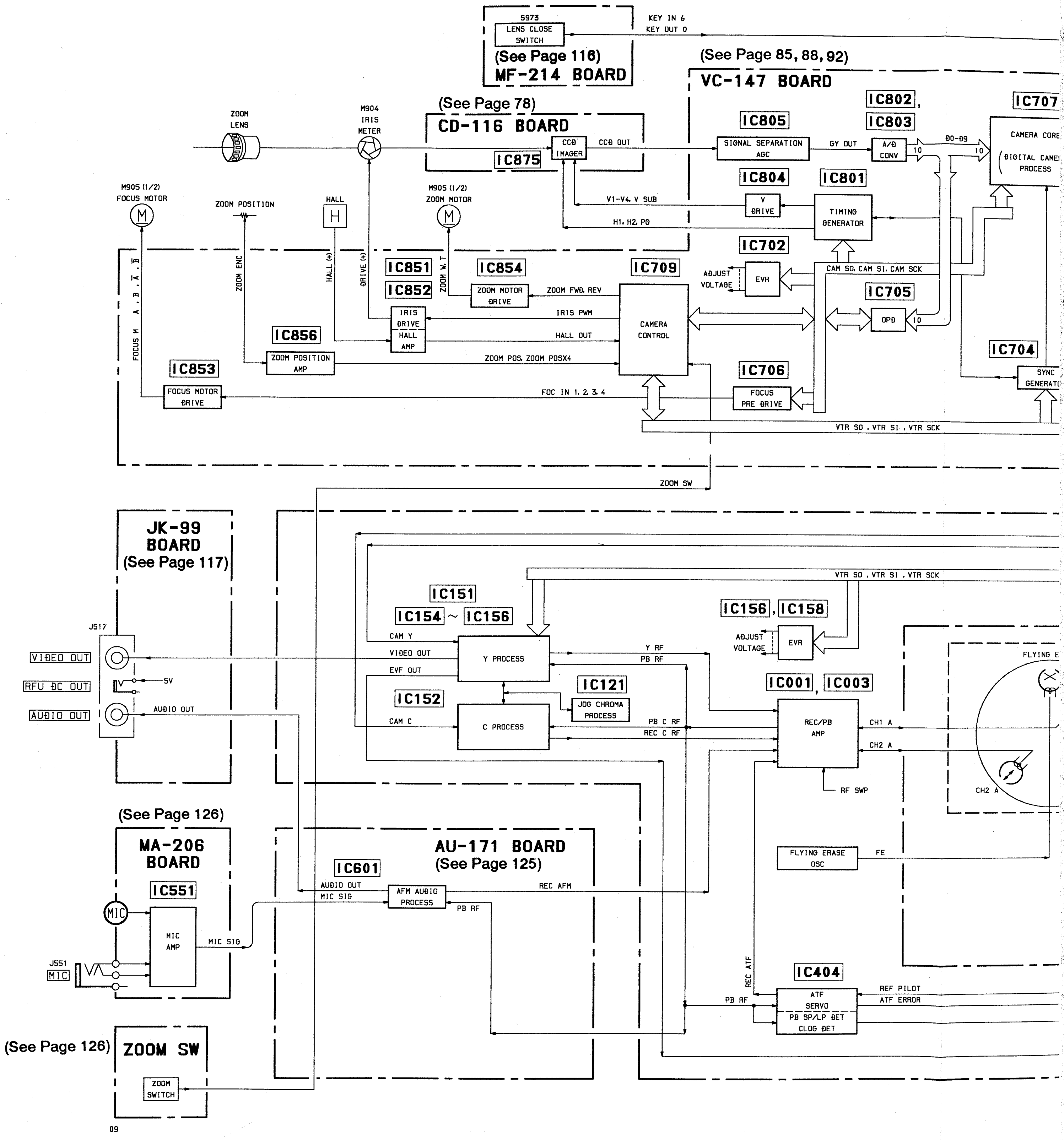

Zoom lens (VCL-6210WF)
1-547-630-11 (TYPE B)
M905
Focus motor assembly
3-708-656-01 (TYPE B)
M904
IRIS meter assembly
3-708-653-01 (TYPE B)
M906
Zoom motor assembly
3-708-654-01 (TYPE B)

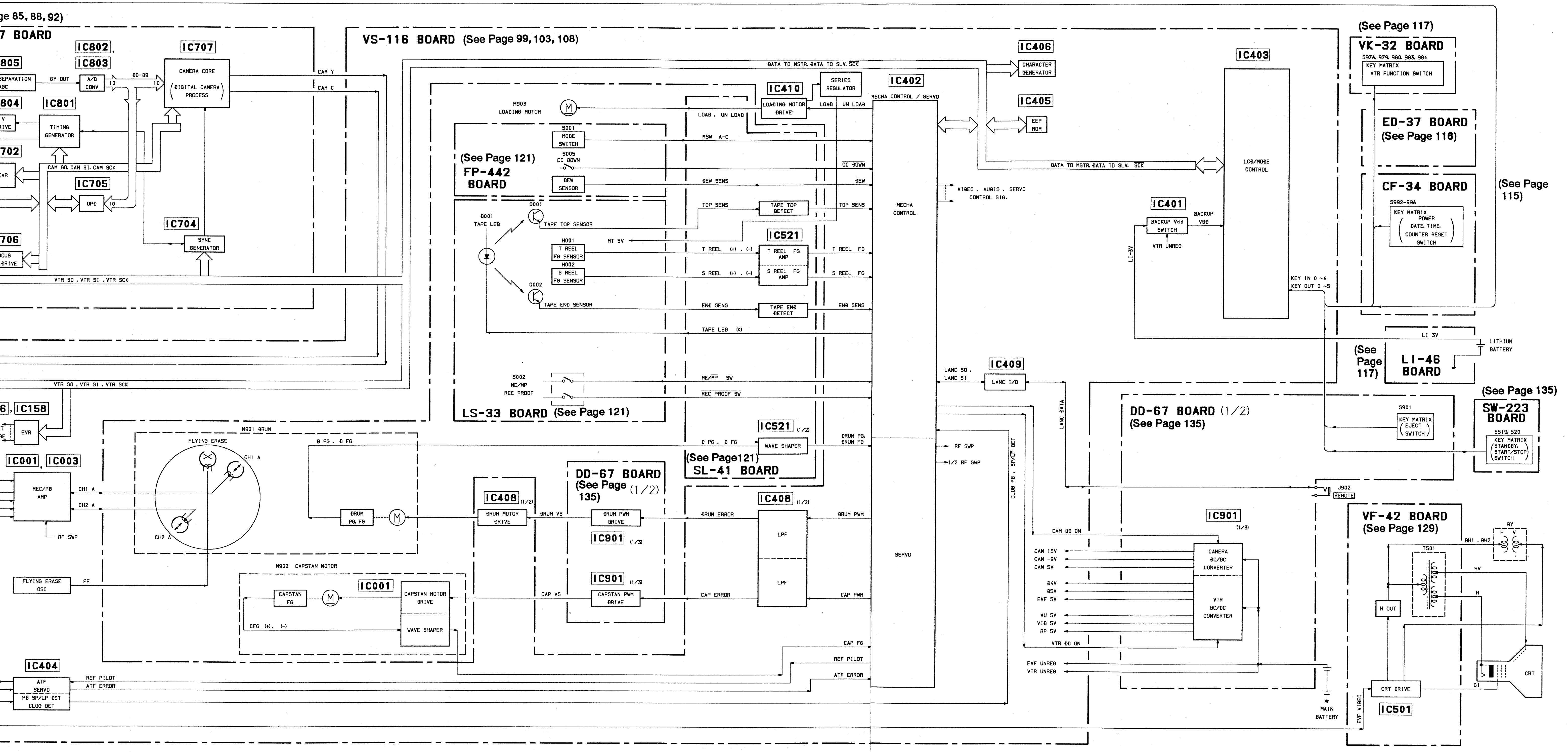
2-15. CIRCUIT BOARDS LOCATION


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier, Video, Servo, System Control)
DD-67
(Power)
ED-37
(Board Link)
VK-32
(VTR Function)
SL-41
(Mecha Control)
MA-206
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-171
(AFM Audio)
CN-84
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

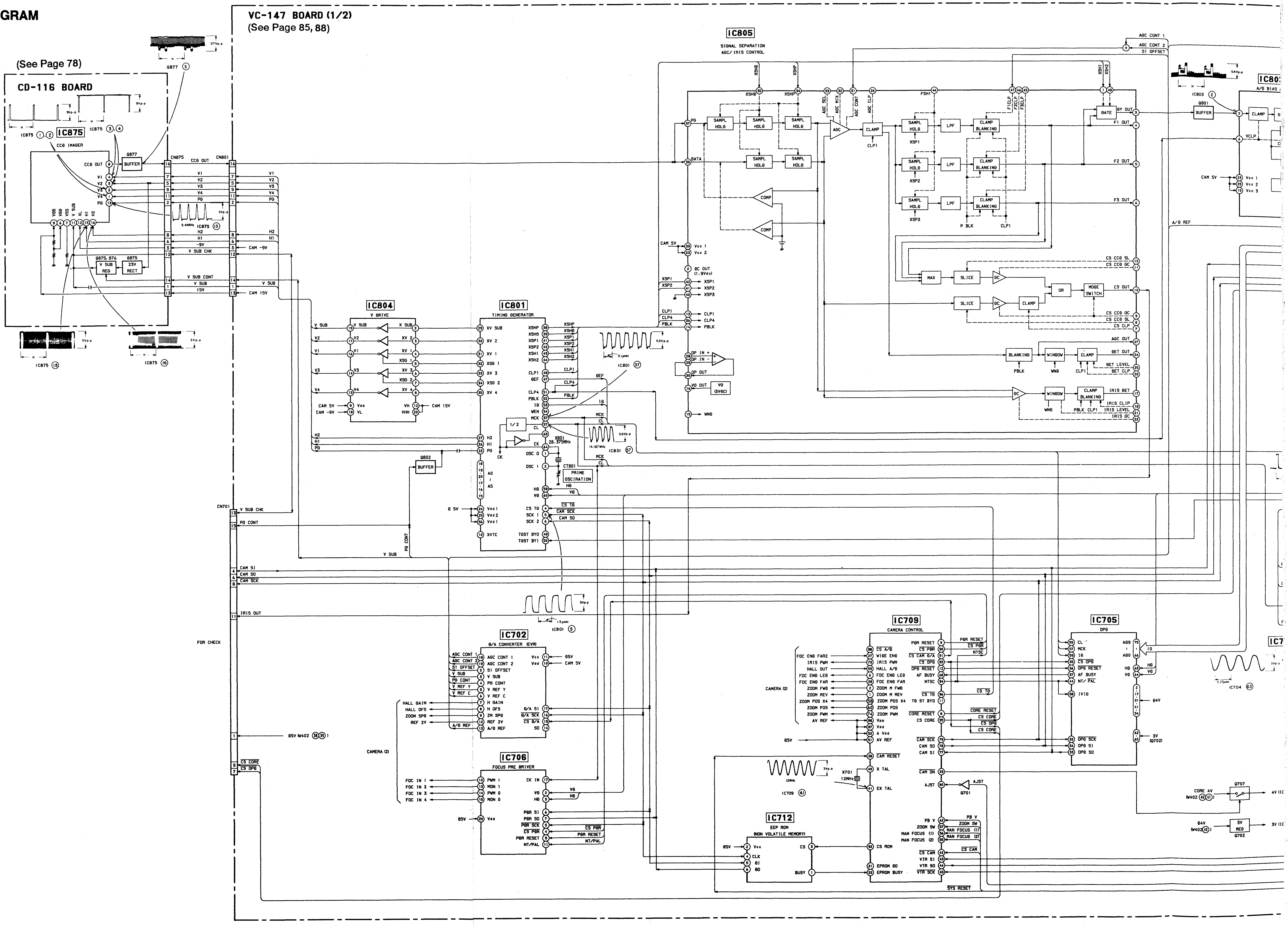
SECTION 3
BLOCK DIAGRAMS

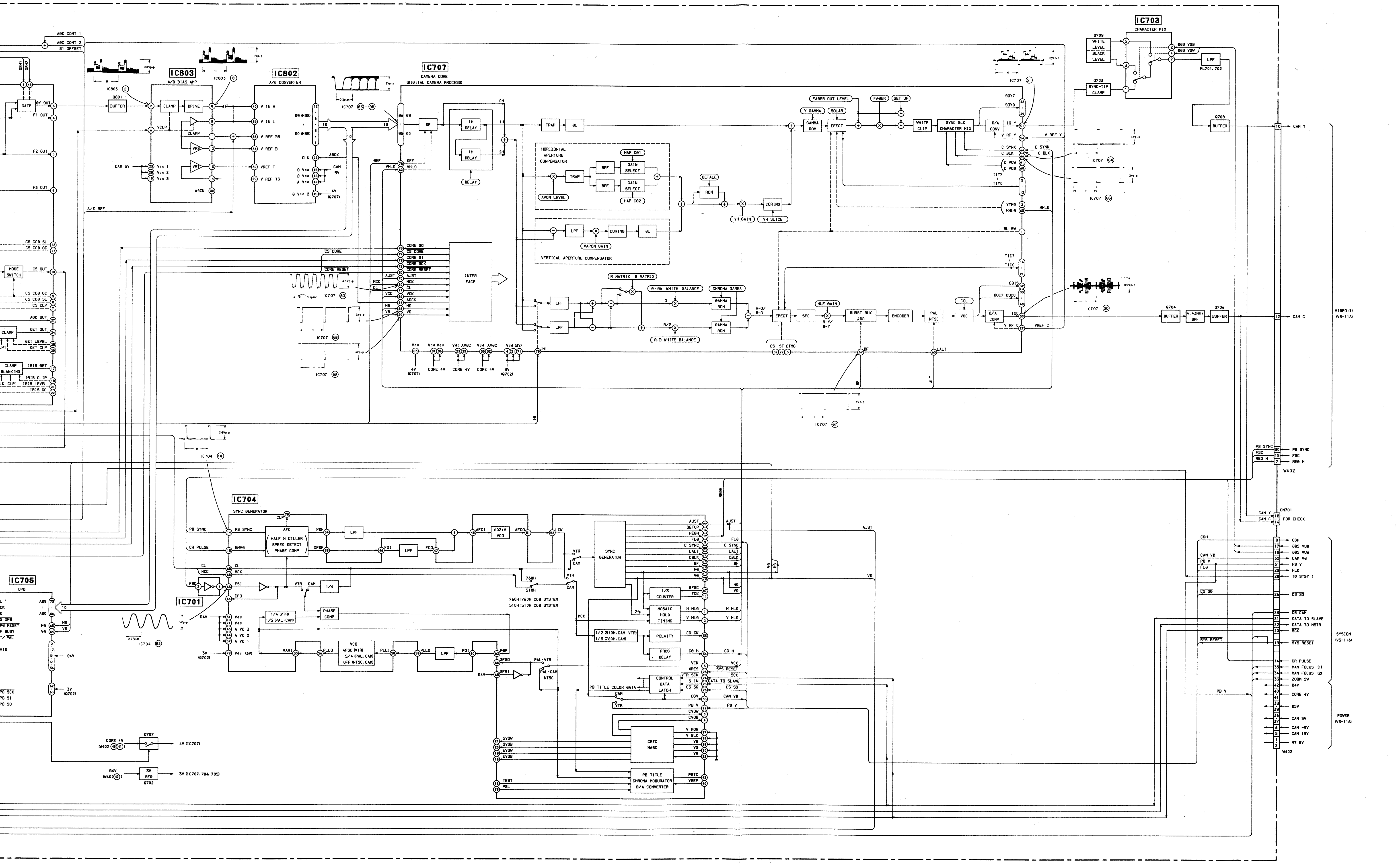
3-1. OVERALL BLOCK DIAGRAM


S973
LENS CLOSE SWITCH
KEY IN 6
KEY OUT 0
(See Page 116)
MF-214 BOARD
(See Page 85, 88, 92)
VC-147 BOARD
(See Page 78)
CD-116 BOARD
IC875
CCD IMAGER
CCD OUT
ZOOM LENS
M904 IRIS METER
M905 (1/2) FOCUS MOTOR
ZOOM POSITION
HALL
M905 (1/2) ZOOM MOTOR
IC805
SIGNAL SEPARATION AGC
GY OUT
A/D CONV
IC802
IC803
IC707
CAMERA CORE
DIGITAL CAMERA PROCESS
IC804
V DRIVE
IC801
TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
IC702
ADJUST VOLTAGE
EVR
CAM SO, CAM SI, CAM SCK
IC705
DPG
IC704
SYNC GENERATOR
IC851
IC852
IC854
IC709
ZOOM MOTOR DRIVE
ZOOM FWD, REV
IRIS DRIVE
HALL AMP
IRIS PWM
HALL OUT
CAMERA CONTROL
IC856
ZOOM POSITION AMP
ZOOM POS, ZOOM POSX4
IC853
FOCUS MOTOR DRIVE
FOC IN 1, 2, 3, 4
IC706
FOCUS PRE DRIVE
VTR SO, VTR SI, VTR SCK
ZOOM SW
JK-99 BOARD
(See Page 117)
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
IC151
IC154 ~ IC156
CAM Y
VIDEO OUT
EVF OUT
Y PROCESS
Y RF
PB RF
IC152
CAM C
C PROCESS
IC121
JOO CHROMA PROCESS
PB C RF
REC C RF
IC156, IC158
ADJUST VOLTAGE
EVR
IC001, IC003
REC/PB AMP
CH1 A
CH2 A
RF SWP
FLYING ERASE
FLYING ERASE OSC
FE
(See Page 126)
MA-206 BOARD
IC551
MIC
MIC AMP
MIC SIG
J551
MIC
AU-171 BOARD
(See Page 125)
IC601
AUDIO OUT
MIC SIG
AFM AUDIO PROCESS
REC AFM
PB RF
IC404
REC ATF
PB RF
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
(See Page 126)
ZOOM SW
ZOOM SWITCH

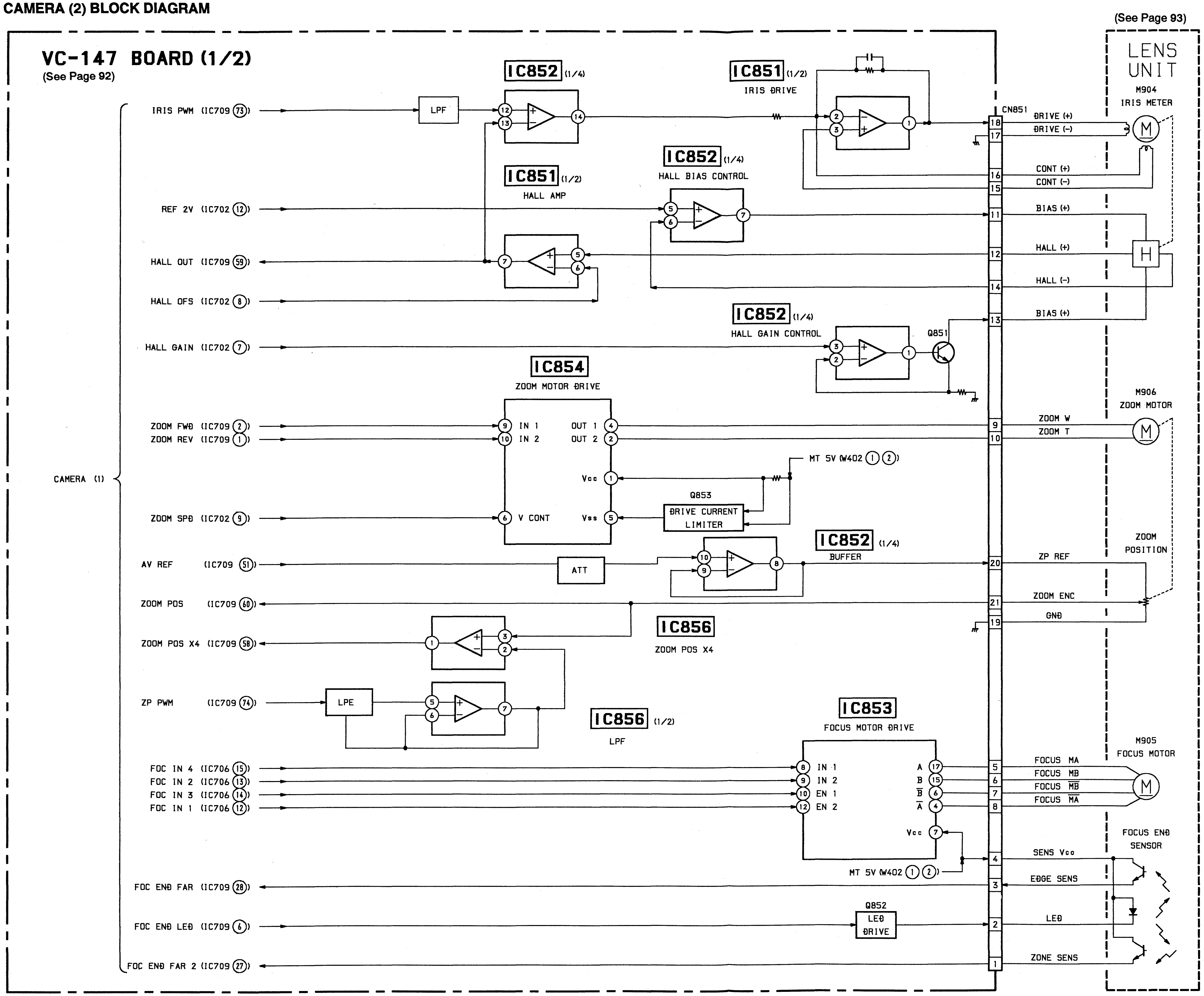

ge 85, 88, 92)
7 BOARD
IC802, IC803
IC707
805
SEPARATION
AGC
GY OUT
A/D CONV
10
D0–D9
CAMERA CORE
DIGITAL CAMERA PROCESS
CAM Y
CAM C
804
IC801
TIMING GENERATOR
702
EVR
CAM SO, CAM SI, CAM SCK
IC705
OPD
IC704
SYNC GENERATOR
706
CUS DRIVE
VTR SO, VTR SI, VTR SCK
6, IC158
EVR
IC001, IC003
REC/PB AMP
CH1 A
CH2 A
RF SWP
FLYING ERASE OSC
FE
IC404
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
VS-116 BOARD (See Page 99, 103, 108)
DATA TO MSTR, DATA TO SLV, SCK
IC410
LOADING MOTOR DRIVE
SERIES REGULATOR
IC402
MECHA CONTROL / SERVO
IC406
CHARACTER GENERATOR
IC405
EEP ROM
M903 LOADING MOTOR
LOAD, UN LOAD
LOAD
UN LOAD
(See Page 121)
FP-442 BOARD
S001 MODE SWITCH
MSW A–C
S005 CC DOWN
CC DOWN
DEW SENSOR
DEW SENS
DEW
Q001
D001 TAPE LED
TAPE TOP SENSOR
TOP SENS
TAPE TOP DETECT
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
MT 5V
IC521
T REEL (+), (–)
T REEL FG AMP
T REEL FG
S REEL (+), (–)
S REEL FG AMP
S REEL FG
Q002
TAPE END SENSOR
END SENS
TAPE END DETECT
TAPE LED (K)
S002 ME/MP REC PROOF
ME/MP SW
REC PROOF SW
LS-33 BOARD (See Page 121)
MECHA CONTROL
VIDEO, AUDIO, SERVO CONTROL SIG.
SERVO
M901 DRUM
FLYING ERASE
CH1 A
CH2 A
D PG, D FG
DRUM PG, FG
IC521 (1/2)
WAVE SHAPER
DRUM PG, DRUM FG
(See Page121)
SL-41 BOARD
RF SWP
1/2 RF SWP
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM VS
DD-67 BOARD (See Page 135) (1/2)
DRUM PWM DRIVE
IC901 (1/3)
DRUM ERROR
IC408 (1/2)
LPF
DRUM PWM
M902 CAPSTAN MOTOR
CAPSTAN FG
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CFG (+), (–)
CAP VS
IC901 (1/3)
CAPSTAN PWM DRIVE
CAP ERROR
CAP PWM
CAP FG
REF PILOT
ATF ERROR
CLOG PB, SP/LP DET
IC403
LCD/MODE CONTROL
IC401
BACKUP Vdd SWITCH
BACKUP VDD
VTR UNREG
LI-3V
KEY IN 0–6
KEY OUT 0–5
LANC SO, LANC SI
IC409
LANC I/O
LANC DATA
(See Page 117)
VK-32 BOARD
S976, 979, 980, 983, 984
KEY MATRIX
VTR FUNCTION SWITCH
ED-37 BOARD
(See Page 116)
CF-34 BOARD
(See Page 115)
S992–996
KEY MATRIX
POWER
DATE, TIME, COUNTER RESET SWITCH
LI 3V
(See Page 117)
LI-46 BOARD
LITHIUM BATTERY
DD-67 BOARD (1/2)
(See Page 135)
S901
KEY MATRIX
EJECT SWITCH
(See Page 135)
SW-223 BOARD
S519, 520
KEY MATRIX
STANDBY, START/STOP SWITCH
J902
REMOTE
IC901 (1/3)
CAM DD ON
CAM 15V
CAM -9V
CAM 5V
D4V
D5V
EVF 5V
AU 5V
VID 5V
RP 5V
VTR DD ON
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
EVF UNREG
VTR UNREG
MAIN BATTERY
VF-42 BOARD
(See Page 129)
DH1, DH2
DY
H
V
T501
HV
H
H OUT
CRT
G1
CRT DRIVE
EVF VIDEO
IC501

3-2. CAMERA (1) BLOCK DIAGRAM


(See Page 78)
CD-116 BOARD
IC875
CCD IMAGER
Q877
BUFFER
CN875
VC-147 BOARD (1/2)
(See Page 85, 88)
CN801
IC805
SIGNAL SEPARATION
AGC/ IRIS CONTROL
IC804
V DRIVE
IC801
TIMING GENERATOR
Q802
BUFFER
X801
28.375MHz
CN701
FOR CHECK
IC702
D/A CONVERTER (EVR)
IC706
FOCUS PRE DRIVER
IC709
CAMERA CONTROL
IC712
EEP ROM
(NON VOLATILE MEMORY)
X701
12MHz
IC705
DPG
CAMERA (2)
Q702
Q707
AJST
Q701

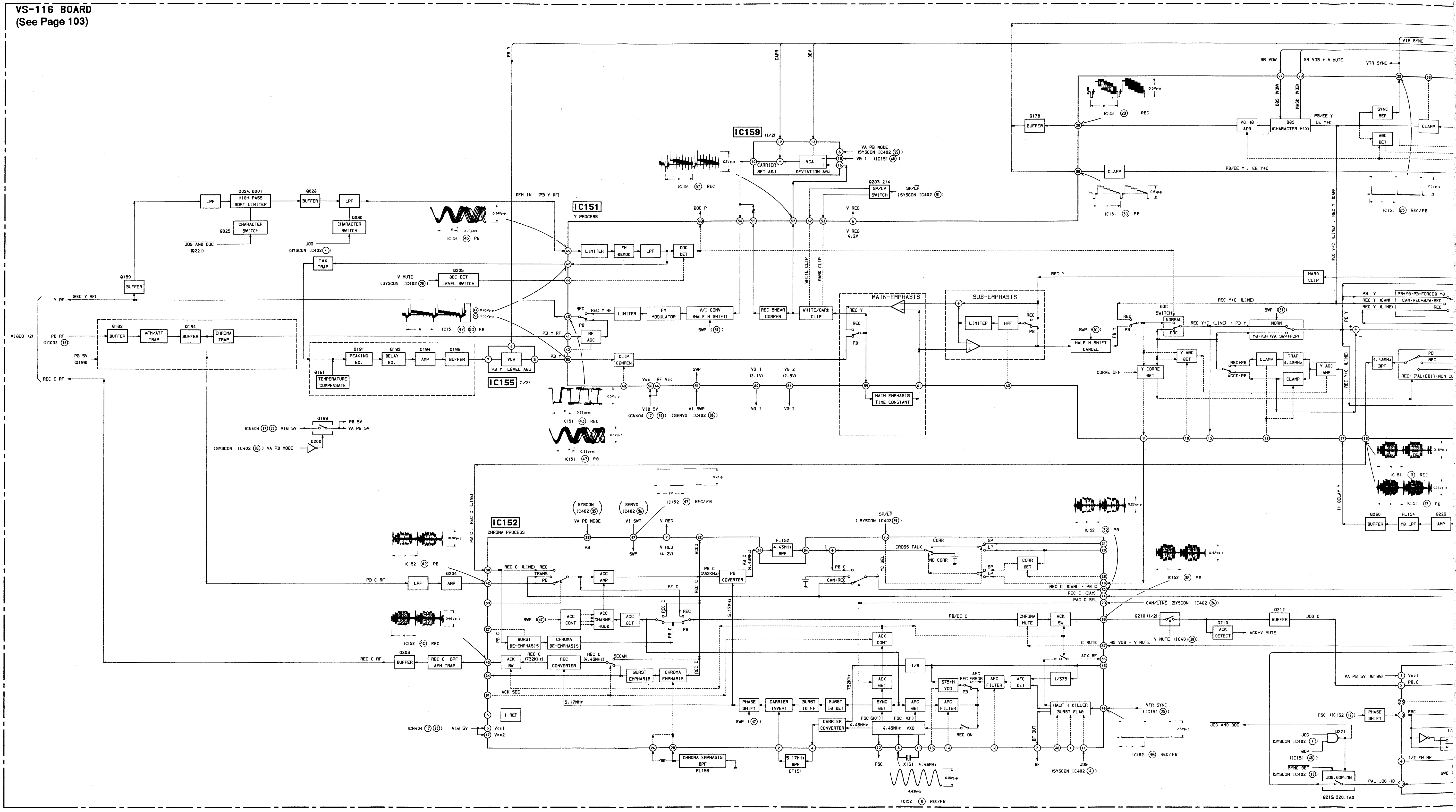

IC803
A/D BIAS AMP
IC802
A/D CONVERTER
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC703
CHARACTER MIX
IC704
SYNC GENERATOR
IC701
IC705
DPG
AGC CONT 1
AGC CONT 2
S1 OFFSET
GATE
BUFFER
CLAMP
DRIVE
VCLP
CAM 5V
Vcc 1
Vcc 2
Vcc 3
ADCK
V IN H
V IN L
V REF BS
V REF B
VREF T
V REF TS
CLK
D Vcc
A Vcc
D Vcc 2
CS CCD SL
CS CCD DC
MODE SWITCH
CS OUT
AGC OUT
DET OUT
DET LEVEL
DET CLP
IRIS DET
IRIS CLIP
IRIS LEVEL
IRIS DC
CLAMP BLANKING
A/D REF
DE
1H DELAY
DELAY
TRAP
DL
HORIZONTAL APERTURE COMPENSATOR
APCN LEVEL
BPF
GAIN SELECT
HAP CD1
HAP CD2
DETALE
ROM
CORING
VH GAIN
VH SLICE
VERTICAL APERTURE COMPENSATOR
VAPCN GAIN
LPF
INTER FACE
CORE SO
CS CORE
CORE SI
CORE SCK
CORE RESET
AJST
MCK
CL
VCK
ABCK
HD
VD
FADER OUT LEVEL
FADER
SET UP
Y GAMMA
SOLAR
GAMMA ROM
EFECT
WHITE CLIP
SYNC BLK CHARACTER MIX
D/A CONV
R MATRIX B MATRIX
G/ G/ WHITE BALANCE
CHROMA GAMMA
R-G/ B-G
SFC
HUE GAIN
R-Y/ B-Y
BURST BLK ADD
ENCODER
PAL NTSC
CDL
VDC
Vdd
4V (Q707)
CORE 4V
3V (Q702)
WHITE LEVEL
BLACK LEVEL
SYNC-TIP CLAMP
Q709
Q703
DDS VDB
DDS VDW
FL701, 702
Q708
BUFFER
CAM Y
Q704
4.43MHz BPF
Q706
CAM C
VIDEO (1) (VS-116)
PB SYNC
FSC
REG H
W402
CN701
FOR CHECK
CDH
CAM VD
PB V
FLD
TO STBY 1
CS SO
CS CAM
DATA TO SLAVE
DATA TO MSTR
SCK
SYS RESET
SYSCON (VS-116)
CR PULSE
MAN FOCUS (1)
MAN FOCUS (2)
ZOOM SW
D4V
D5V
CAM 5V
CAM -9V
CAM 15V
MT 5V
POWER (VS-116)
AFC
HALF H KILLER SPEED DETECT PHASE COMP
ENVD
602fH VCO
SYNC GENERATOR
1/3 COUNTER
MOSAIC HOLD TIMING
POLAITY
PROD DELAY
1/2 (510H.CAM VTR)
1/3 (760H.CAM)
760H:760H CCD SYSTEM
510H:510H CCD SYSTEM
1/4
PHASE COMP
1/4 (VTR)
1/5 (PAL-CAM)
VCO
4FSC (VTR)
5/4 (PAL-CAM)
OFF (NTSC.CAM)
PAL-VTR
PAL-CAM
NTSC
CONTROL DATA LATCH
PB TITLE COLOR DATA
CRTC MASC
PB TITLE CHROMA MODURATOR D/A CONVERTER
TEST
PBL
CORE 4V
Q707
4V (IC707)
D4V
3V REG
Q702
3V (IC707, 704, 705)
IC707 (86) - (95)
IC707 (51)
IC707 (64)
IC707 (66)
IC707 (30)
IC707 (67)
IC707 (80)
IC707 (68)
IC707 (69)
IC704 (14)
IC704 (63)
IC803 (2)
IC803 (8)

3-3. CAMERA (2) BLOCK DIAGRAM

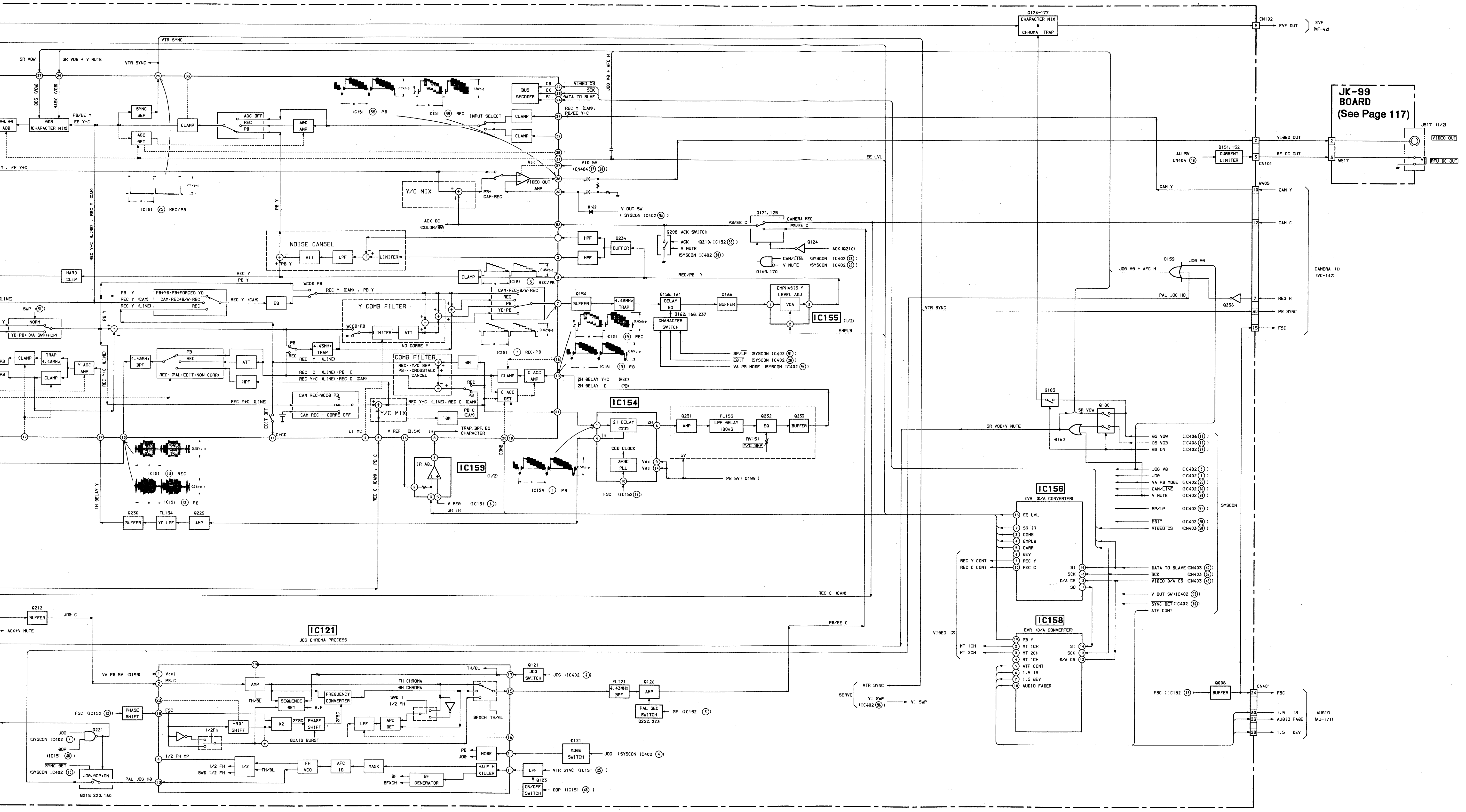

VC-147 BOARD (1/2)
(See Page 92)
(See Page 93)
LENS UNIT
M904
IRIS METER
M906
ZOOM MOTOR
ZOOM POSITION
M905
FOCUS MOTOR
FOCUS END SENSOR
CAMERA (1)
IRIS PWM (IC709 (73))
REF 2V (IC702 (12))
HALL OUT (IC709 (59))
HALL OFS (IC702 ⑧)
HALL GAIN (IC702 ⑦)
ZOOM FWD (IC709 ②)
ZOOM REV (IC709 ①)
ZOOM SPD (IC702 ⑨)
AV REF (IC709 (51))
ZOOM POS (IC709 (60))
ZOOM POS X4 (IC709 (58))
ZP PWM (IC709 (74))
FOC IN 4 (IC706 (15))
FOC IN 2 (IC706 (13))
FOC IN 3 (IC706 (14))
FOC IN 1 (IC706 (12))
FOC END FAR (IC709 (28))
FOC END LED (IC709 ⑥)
FOC END FAR 2 (IC709 (27))
LPF
IC852 (1/4)
IC851 (1/2)
IRIS DRIVE
IC852 (1/4)
HALL BIAS CONTROL
IC851 (1/2)
HALL AMP
IC852 (1/4)
HALL GAIN CONTROL
Q851
IC854
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
MT 5V (W402 ① ②)
Q853
DRIVE CURRENT LIMITER
IC852 (1/4)
BUFFER
ATT
IC856
ZOOM POS X4
LPE
IC856 (1/2)
LPF
IC853
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
B̄
Ā
Vcc
MT 5V (W402 ① ②)
Q852
LED DRIVE
CN851
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
BIAS (+)
HALL (+)
HALL (-)
BIAS (+)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
GND
FOCUS MA
FOCUS MB
FOCUS M̄B
FOCUS M̄A
SENS Vcc
EDGE SENS
LED
ZONE SENS
M
H

09

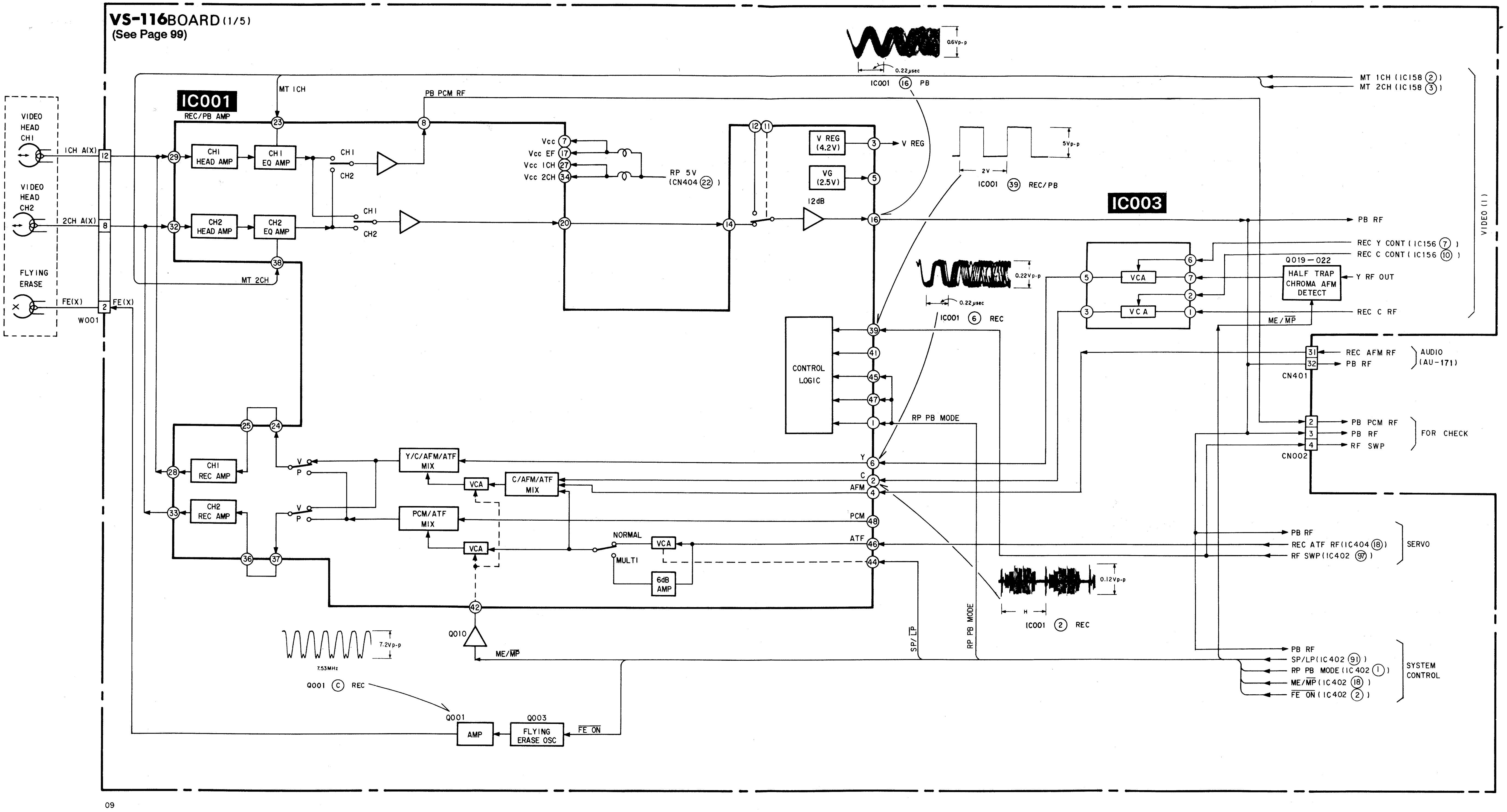
3-4. VIDEO (1) BLOCK DIAGRAM

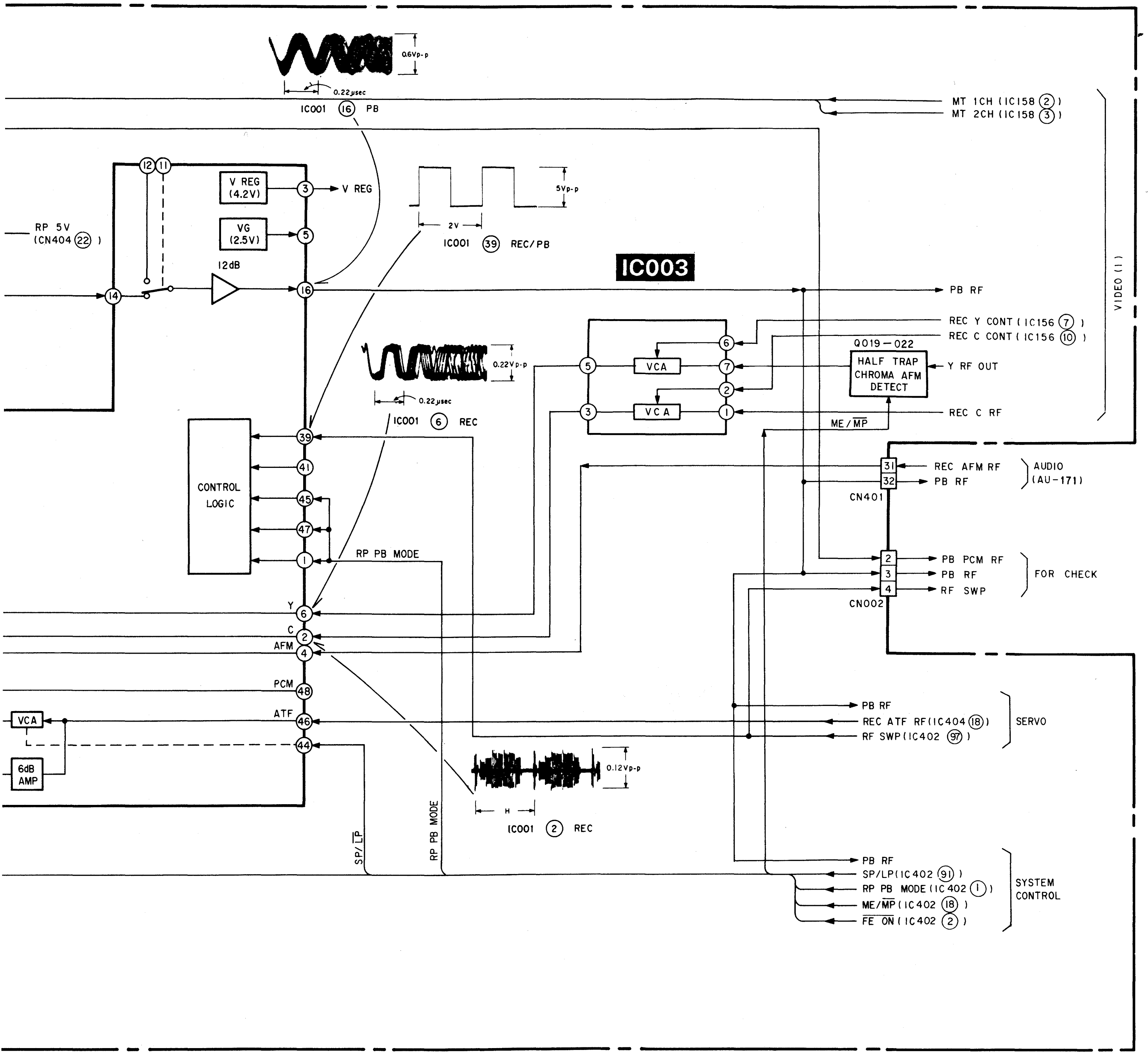

VS-116 BOARD
(See Page 103)
IC151
Y PROCESS
IC152
CHROMA PROCESS
IC155 (1/2)
IC159 (1/2)
VIDEO (2)
Y RF
PB RF (IC002 16)
PB 5V (Q199)
REC C RF
Q182 BUFFER
AFM/ATF TRAP
Q184 BUFFER
CHROMA TRAP
Q189 BUFFER
LPF
Q024, Q001 HIGH PASS SOFT LIMITER
Q025 CHARACTER SWITCH
Q026 BUFFER
Q030 CHARACTER SWITCH
JOG AND ODC (Q221)
fsc TRAP
Q205 ODC DET LEVEL SWITCH
V MUTE (SYSCON IC402 22)
Q191 PEAKING EQ.
Q192 DELAY EQ.
Q194 AMP
Q195 BUFFER
Q161 TEMPERATURE COMPENSATE
VCA
PB Y LEVEL ADJ
LIMITER
FM DEMOD
ODC DET
RF AGC
FM MODULATOR
V/I CONV (HALF H SHIFT)
CLIP COMPEN
REC SMEAR COMPEN
WHITE/DARK CLIP
CARRIER SET ADJ
DEVIATION ADJ
Q207, 214 SP/LP SWITCH
VA PB MODE (SYSCON IC402 55)
VG 1 (IC151 68)
V REG 4.2V
MAIN-EMPHASIS
MAIN EMPHASIS TIME CONSTANT
SUB-EMPHASIS
HPF
HALF H SHIFT CANCEL
ODC SWITCH NORMAL ODC
Y CORRE DET
Y AGC DET
CLAMP
TRAP 4.43MHz
Y AGC AMP
4.43MHz BPF
HARD CLIP
Q178 BUFFER
VG HD ADD
ODS (CHARACTER MIX)
SYNC SEP
AGC DET
VTR SYNC
Q230 BUFFER
FL154 YD LPF
Q229 AMP
1H DELAY Y
Q199
Q200
(SYSCON IC402 55) VA PB MODE
PB C RF
Q204 AMP
Q203 BUFFER
REC C BPF AFM TRAP
ACC AMP
ACC CONT
ACC CHANNEL HOLD
ACC DET
BURST DE-EMPHASIS
CHROMA DE-EMPHASIS
ACK SW
REC CONVERTER
BURST EMPHASIS
CHROMA EMPHASIS
I REF
PB CONVERTER
FL152 4.43MHz BPF
CROSS TALK
CORR DET
CHROMA MUTE
ACK SW
ACK CONT
ACK DET
1/8
375fH VCO
AFC FILTER
AFC DET
1/375
HALF H KILLER BURST FLAG
PHASE SHIFT
CARRIER INVERT
BURST ID FF
BURST ID DET
SYNC DET
APC DET
APC FILTER
CARRIER CONVERTER
4.43MHz VXO
X151 4.43MHz
CHROMA EMPHASIS BPF FL153
5.17MHz BPF CF151
Q210 (1/2)
Q210 ACK DETECT
Q212 BUFFER
JOG C
Q221
JOG ODP:ON
Q215, 220, 160
PHASE SHIFT
IC151 45 PB
IC151 47 50 PB
IC151 43 REC
IC151 43 PB
IC151 57 REC
IC151 28 REC
IC151 30 PB
IC151 25 REC/PB
IC151 13 REC
IC151 13 PB
IC152 42 PB
IC152 40 REC
IC152 47 REC/PB
IC152 32 PB
IC152 38 PB
IC152 46 REC/PB
IC152 8 REC/PB

09

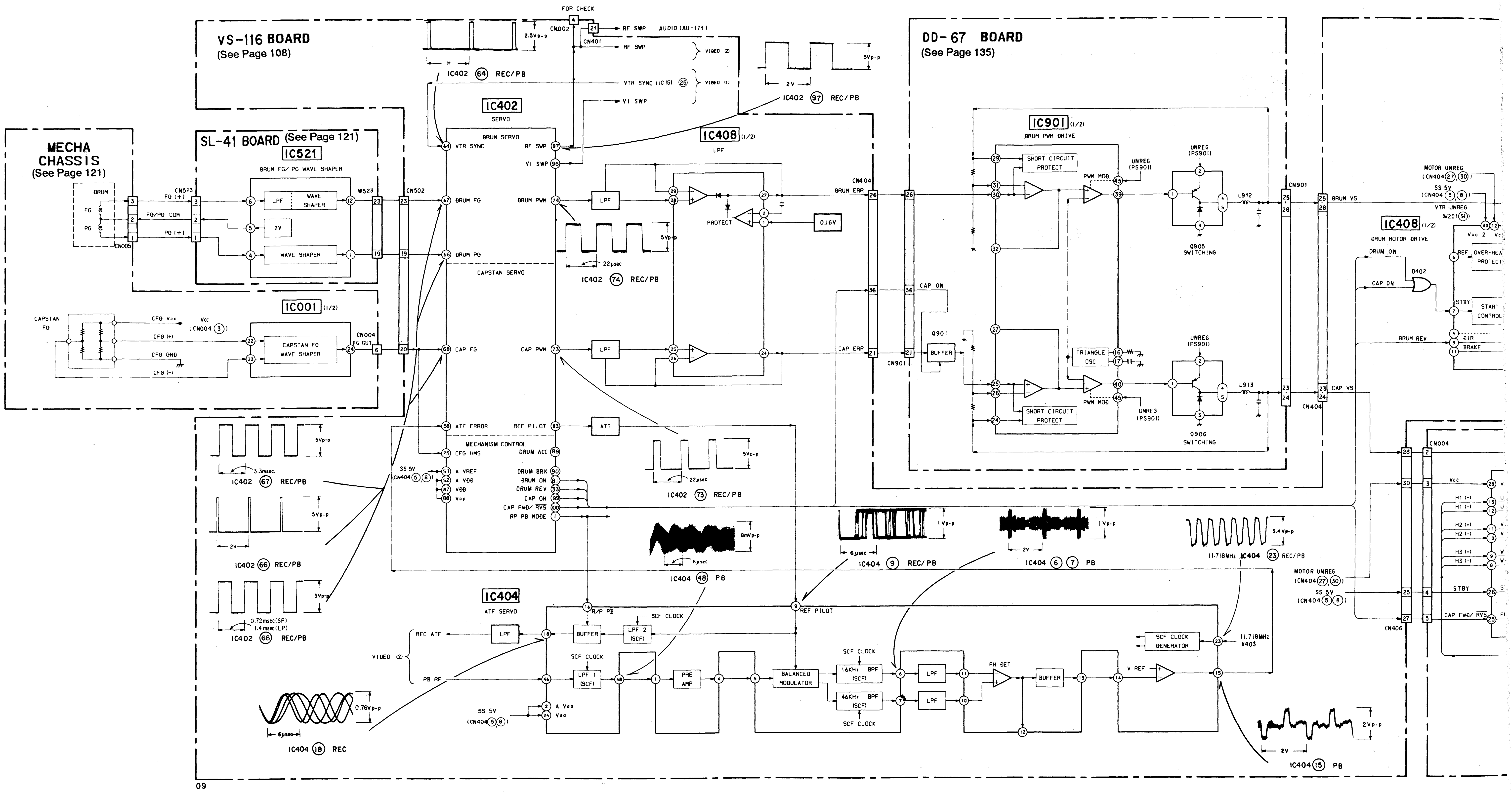

JK-99
BOARD
(See Page 117)
IC121
JOG CHROMA PROCESS
IC154
IC155
IC156
EVR (D/A CONVERTER)
IC158
EVR (D/A CONVERTER)
IC159
Q174-177
CHARACTER MIX & CHROMA TRAP
CN102
EVF OUT
EVF (VF-42)
BUS DECODER
VIDEO CS
SCK
DATA TO SLVE
Y/C MIX
NOISE CANSEL
Y COMB FILTER
COMB FILTER
REC··Y/C SEP
PB···CROSSTALK CANCEL
VIDEO OUT AMP
INPUT SELECT
AGC OFF
AGC AMP
AGC DET
SYNC SEP
CLAMP
OSD (CHARACTER MIX)
HARD CLIP
EMPHASIS Y LEVEL ADJ
VCA
2H DELAY (CCD)
3FSC PLL
CCD CLOCK
FL155 LPF DELAY 180nS
EQ
BUFFER
Q151, 152 CURRENT LIMITER
VIDEO OUT
RF DC OUT
J517
W517
CN101
W405
CAM Y
CAM C
REG H
PB SYNC
FSC
CAMERA (1) (VC-147)
SYSCON
VTR SYNC
VI SWP
SERVO
CN401
1.5 IR
AUDIO FADE
1.5 DEV
AUDIO (AU-171)
SEQUENCE DET
FREQUENCY CONVERTER
-90° SHIFT
PHASE SHIFT
APC DET
FH VCO
AFC ID
MASK
HALF H KILLER
BF GENERATOR
MODE SWITCH
JOG SWITCH
FL121 4.43MHz BPF
PAL SEC SWITCH
Q222, 223
ON/OFF SWITCH
JOG, DOP:ON
Q219, 220, 160
PHASE SHIFT
IR ADJ
2H DELAY Y+C (REC)
2H DELAY C (PB)

3-5. VIDEO (2) BLOCK DIAGRAM

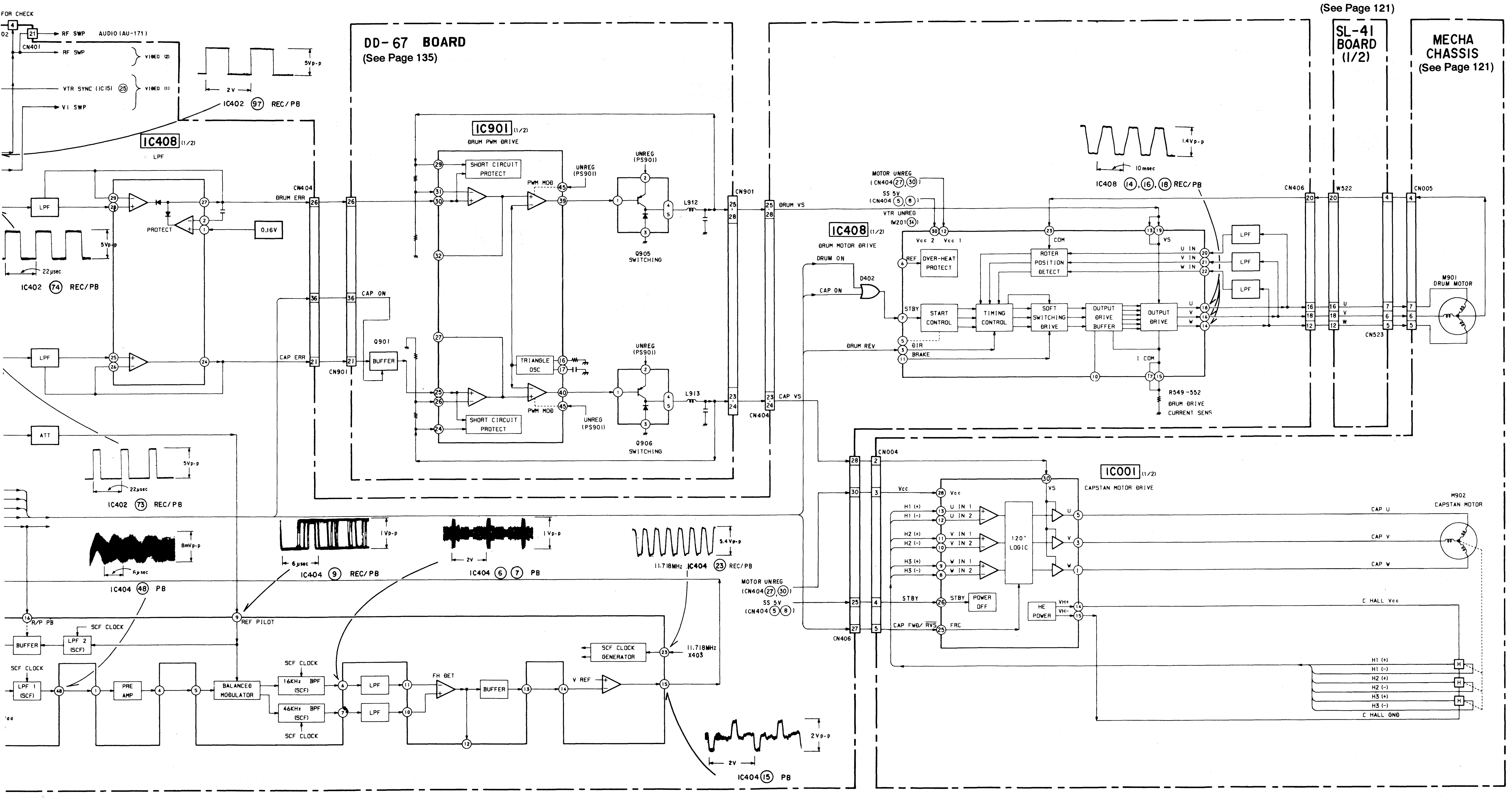

VS-116 BOARD (1/5)
(See Page 99)
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
1CH A(X)
2CH A(X)
FE(X)
FE(X)
W001
12
8
2
IC001
REC/PB AMP
MT 1CH
MT 2CH
PB PCM RF
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
Vcc ⑦
Vcc EF ⑰
Vcc 1CH ㉗
Vcc 2CH ㉞
RP 5V (CN404 ㉒)
V REG (4.2V)
VG (2.5V)
V REG
12dB
CONTROL LOGIC
RP PB MODE
0.6Vp-p
0.22μsec
IC001 ⑯ PB
5Vp-p
2V
IC001 ㊴ REC/PB
0.22Vp-p
0.22μsec
IC001 ⑥ REC
0.12Vp-p
H
IC001 ② REC
IC003
VCA
VCA
Q019 – 022
HALF TRAP CHROMA AFM DETECT
Y RF OUT
ME/MP
MT 1CH (IC158 ②)
MT 2CH (IC158 ③)
PB RF
REC Y CONT (IC156 ⑦)
REC C CONT (IC156 ⑩)
REC C RF
VIDEO (1)
REC AFM RF
PB RF
AUDIO (AU-171)
CN401
PB PCM RF
PB RF
RF SWP
FOR CHECK
CN002
CH1 REC AMP
CH2 REC AMP
V
P
Y/C/AFM/ATF MIX
C/AFM/ATF MIX
PCM/ATF MIX
VCA
NORMAL
MULTI
6dB AMP
Y
C
AFM
PCM
ATF
Q010
ME/MP
7.2Vp-p
7.53MHz
Q001 Ⓒ REC
Q001
AMP
Q003
FLYING ERASE OSC
FE ON
SP/LP
RP PB MODE
PB RF
REC ATF RF (IC404 ⑱)
RF SWP (IC402 ㉗)
SERVO
PB RF
SP/LP (IC402 ㊱)
RP PB MODE (IC402 ①)
ME/MP (IC402 ⑱)
FE ON (IC402 ②)
SYSTEM CONTROL
09


0.6Vp-p
0.22μsec
IC001 ⑯ PB
MT 1CH (IC158 ②)
MT 2CH (IC158 ③)
⑫ ⑪
V REG (4.2V)
③ V REG
5Vp-p
RP 5V (CN404 ㉒)
VG (2.5V)
⑤
2V
IC001 ㊴ REC/PB
12dB
⑭
⑯
IC003
PB RF
VIDEO (1)
REC Y CONT (IC156 ⑦)
REC C CONT (IC156 ⑩)
Q019 — 022
HALF TRAP CHROMA AFM DETECT
Y RF OUT
0.22Vp-p
⑤ VCA ⑥ ⑦ ②
③ VCA ①
0.22μsec
IC001 ⑥ REC
REC C RF
ME/MP
CONTROL LOGIC
㊴ ㊶ ㊺ ㊼ ①
REC AFM RF
PB RF
31 32
CN401
AUDIO (AU-171)
RP PB MODE
2 3 4
PB PCM RF
PB RF
RF SWP
FOR CHECK
CN002
Y ⑥
C ②
AFM ④
PCM ㊽
ATF ㊻
㊹
VCA
6dB AMP
PB RF
REC ATF RF (IC404 ⑱)
RF SWP (IC402 ㊼)
SERVO
0.12Vp-p
H
IC001 ② REC
SP/LP
RP PB MODE
PB RF
SP/LP (IC402 ㊶)
RP PB MODE (IC402 ①)
ME/MP (IC402 ⑱)
FE ON (IC402 ②)
SYSTEM CONTROL

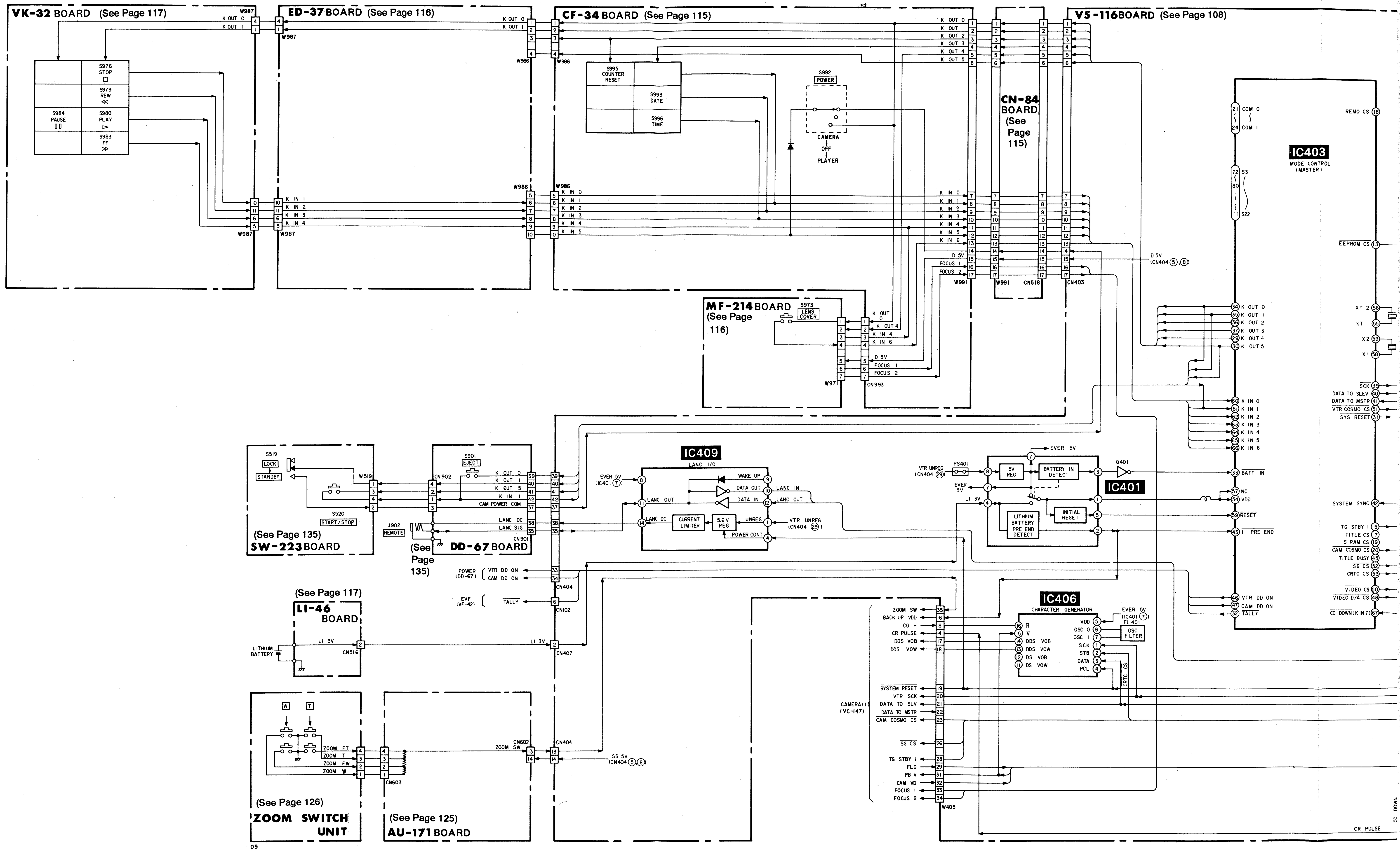
3-6. SERVO BLOCK DIAGRAM



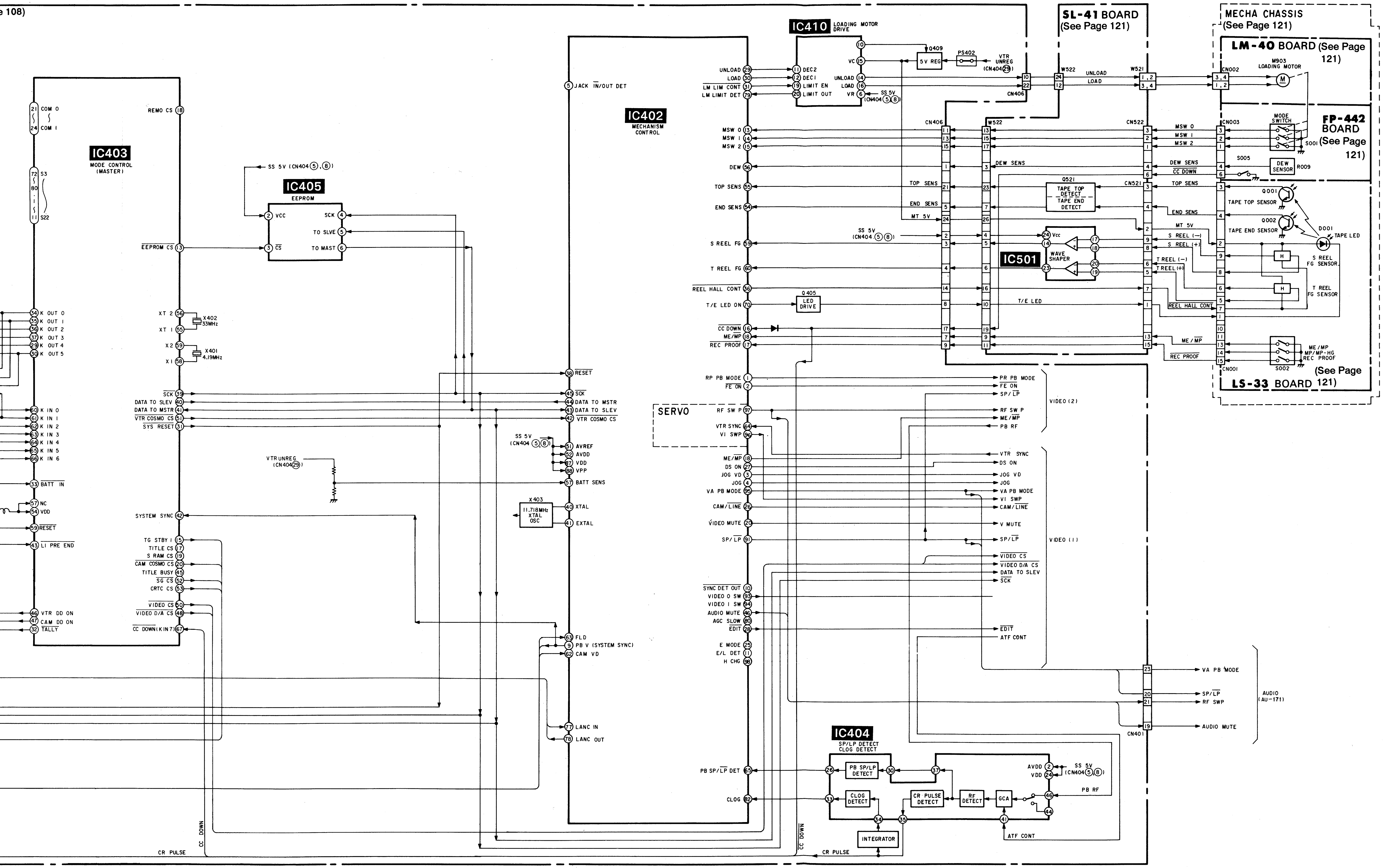
FOR CHECK
CN002
RF SWP
AUDIO (AU-171)
CN401
VIDEO (2)
VTR SYNC (IC151 25)
VIDEO (1)
V1 SWP
VS-116 BOARD
(See Page 108)
2.5Vp-p
H
IC402 64 REC/PB
5Vp-p
2V
IC402 97 REC/PB
MECHA CHASSIS
(See Page 121)
DRUM
FG
PG
CN005
CN523
FG (+)
FG/PG COM
PG (+)
SL-41 BOARD (See Page 121)
IC521
DRUM FG/ PG WAVE SHAPER
LPF
WAVE SHAPER
2V
W523
CN502
IC402
SERVO
DRUM SERVO
VTR SYNC
RF SWP
V1 SWP
DRUM FG
DRUM PWM
DRUM PG
CAPSTAN SERVO
CAP FG
CAP PWM
IC408 (1/2)
LPF
PROTECT
0.16V
22μsec
IC402 74 REC/PB
CN404
DRUM ERR
CAP ON
CAP ERR
CN901
CAPSTAN FG
CFG Vcc
Vcc (CN004 3)
CFG (+)
CFG GND
CFG (-)
IC001 (1/2)
CAPSTAN FG WAVE SHAPER
CN004
FG OUT
DD-67 BOARD
(See Page 135)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
UNREG (PS901)
PWM MOD
Q905 SWITCHING
L912
Q901
BUFFER
TRIANGLE OSC
Q906 SWITCHING
L913
CN901
DRUM VS
CAP VS
CN404
MOTOR UNREG (CN404 27 30)
SS 5V (CN404 5 8)
VTR UNREG (W201 36)
IC408 (1/2)
DRUM MOTOR DRIVE
Vcc 2
DRUM ON
REF
OVER-HEAT PROTECT
D402
STBY
START CONTROL
DRUM REV
DIR
BRAKE
3.3msec.
IC402 67 REC/PB
IC402 66 REC/PB
0.72msec(SP)
1.4msec(LP)
IC402 68 REC/PB
ATF ERROR
REF PILOT
ATT
MECHANISM CONTROL
CFG HMS
DRUM ACC
SS 5V (CN404 5 8)
A VREF
A VDD
VDD
VPP
DRUM BRK
DRUM ON
DRUM REV
CAP ON
CAP FWD/ RVS
RP PB MODE
IC402 73 REC/PB
8mVp-p
6μsec
IC404 48 PB
1Vp-p
IC404 9 REC/PB
IC404 6 7 PB
5.4Vp-p
11.718MHz IC404 23 REC/PB
CN004
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
STBY
CAP FWD/ RVS
CN406
MOTOR UNREG (CN404 27 30)
SS 5V (CN404 5 8)
IC404
ATF SERVO
R/P PB
SCF CLOCK
REF PILOT
REC ATF
LPF
BUFFER
LPF 2 (SCF)
VIDEO (2)
PB RF
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
FH DET
V REF
SCF CLOCK GENERATOR
11.718MHz X403
A Vdd
Vdd
SS 5V (CN404 5 8)
0.76Vp-p
IC404 18 REC
2Vp-p
IC404 15 PB
09


FOR CHECK
RF SWP
AUDIO (AU-171)
CN401
VIDEO (2)
VTR SYNC (IC151 ㉕)
VIDEO (1)
V1 SWP
5Vp-p
2V
IC402 (97) REC/PB
IC408 (1/2)
LPF
PROTECT
0.16V
CN404
DRUM ERR
CAP ERR
5Vp-p
22μsec
IC402 (74) REC/PB
ATT
5Vp-p
22μsec
IC402 (73) REC/PB
8mVp-p
6μsec
IC404 (48) PB
1Vp-p
6μsec
IC404 (9) REC/PB
1Vp-p
2V
IC404 ⑥ ⑦ PB
5.4Vp-p
11.718MHz IC404 ㉓ REC/PB
R/P PB
SCF CLOCK
BUFFER
LPF 2 (SCF)
LPF 1 (SCF)
PRE AMP
REF PILOT
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
LPF
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.718MHz X403
2Vp-p
2V
IC404 ⑮ PB
DD-67 BOARD
(See Page 135)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
UNREG (PS901)
Q905 SWITCHING
L912
CN901
CAP ON
Q901
BUFFER
TRIANGLE OSC
Q906 SWITCHING
L913
DRUM VS
CAP VS
MOTOR UNREG (CN404 ㉗,㉚)
SS 5V (CN404 ⑤,⑧)
VTR UNREG (W201 ㉞)
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
D402
DRUM REV
Vcc 2
Vcc 1
REF
OVER-HEAT PROTECT
STBY
START CONTROL
TIMING CONTROL
ROTER POSITION DETECT
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
COM
VS
U IN
V IN
W IN
DIR
BRAKE
I COM
R549 -552
DRUM DRIVE CURRENT SENS
1.4Vp-p
10msec
IC408 ⑭,⑯,⑱ REC/PB
LPF
CN406
(See Page 121)
SL-41 BOARD (1/2)
W522
CN523
MECHA CHASSIS
(See Page 121)
CN005
M901 DRUM MOTOR
CN004
IC001 (1/2)
CAPSTAN MOTOR DRIVE
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
HE POWER
VH+
VH-
CAP FWD/RVS
FRC
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
C HALL Vcc
C HALL GND

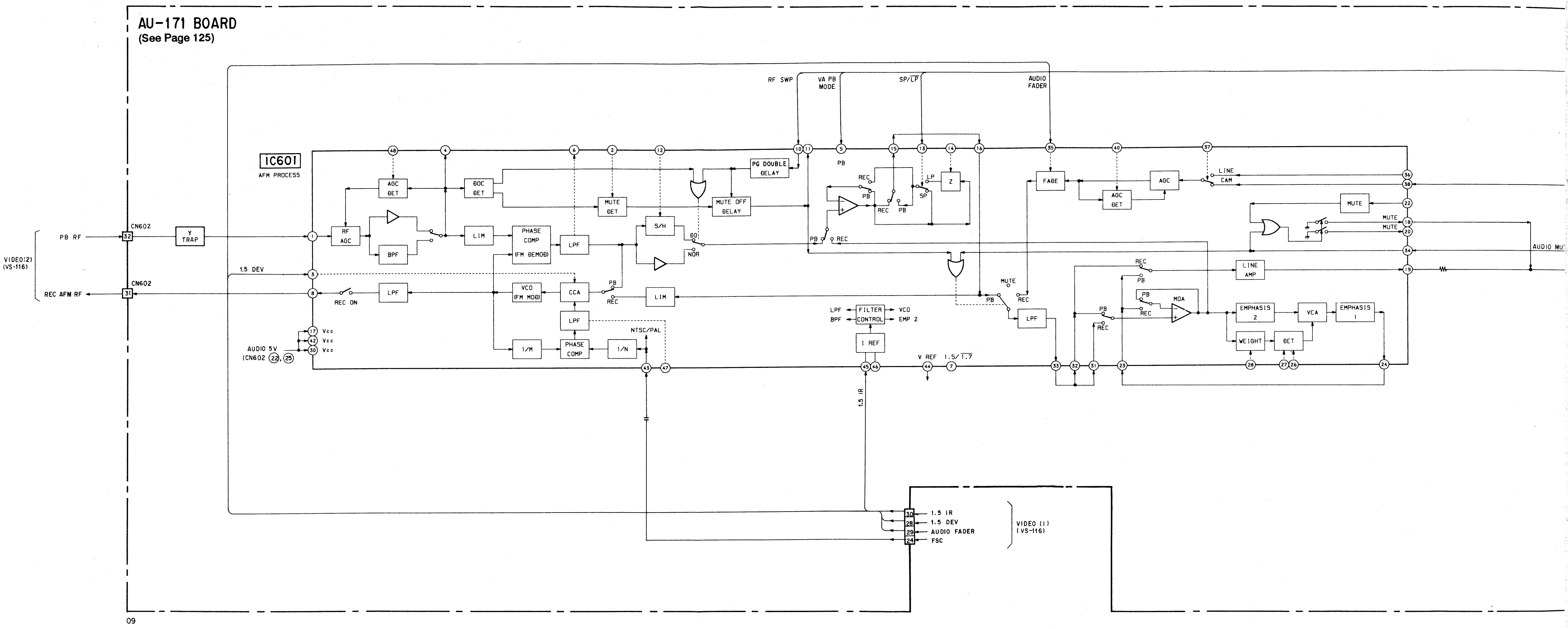
3-7. SYSTEM CONTROL BLOCK DIAGRAM



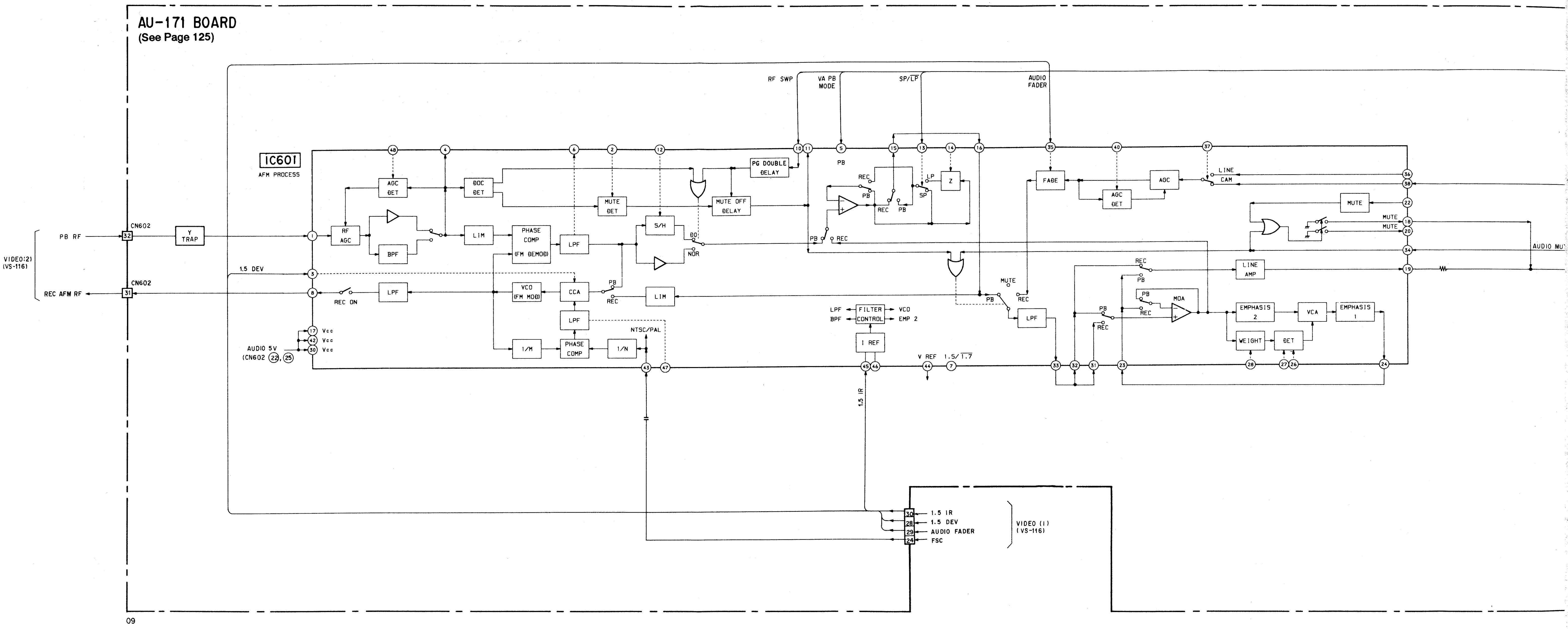
VK-32 BOARD (See Page 117)
W987
K OUT 0
K OUT 1
S976 STOP
S979 REW
S984 PAUSE
S980 PLAY
S983 FF
K IN 1
K IN 2
K IN 3
K IN 4
ED-37 BOARD (See Page 116)
W986
CF-34 BOARD (See Page 115)
S995 COUNTER RESET
S993 DATE
S996 TIME
S992 POWER
CAMERA
OFF
PLAYER
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
D 5V
FOCUS 1
FOCUS 2
W991
CN-84 BOARD (See Page 115)
CN518
VS-116 BOARD (See Page 108)
CN403
D 5V (CN404 ⑤,⑧)
MF-214 BOARD (See Page 116)
S973 LENS COVER
W971
CN993
K OUT 0
K OUT 4
K IN 4
K IN 6
IC403
MODE CONTROL (MASTER)
COM 0
COM 1
S3
S22
REMO CS ⑱
EEPROM CS ⑬
XT 2 (56)
XT 1 (55)
X 2 (59)
X 1 (58)
SCK (39)
DATA TO SLEV (40)
DATA TO MSTR (41)
VTR COSMO CS (51)
SYS RESET (31)
BATT IN
NC
VDD
RESET
LI PRE END
SYSTEM SYNC (42)
TG STBY I ⑮
TITLE CS ⑰
S RAM CS ⑲
CAM COSMO CS ⑳
TITLE BUSY (45)
SG CS (52)
CRTC CS (53)
VIDEO CS (50)
VIDEO D/A CS (48)
CC DOWN (KIN 7) (67)
VTR DD ON
CAM DD ON
TALLY
SW-223 BOARD (See Page 135)
S519 LOCK STANDBY
S520 START/STOP
W519
DD-67 BOARD (See Page 135)
CN902
CN901
S901 EJECT
K OUT 0
K OUT 1
K OUT 5
K IN 1
CAM POWER COM
LANC DC
LANC SIG
J902 REMOTE
POWER (DD-67)
VTR DD ON
CAM DD ON
EVF (VF-42)
TALLY
CN404
CN102
IC409
LANC I/O
EVER 5V (IC401 ⑦)
WAKE UP
DATA OUT
DATA IN
LANC IN
LANC OUT
LANC DC
CURRENT LIMITER
5.6 V REG
UNREG
POWER CONT
VTR UNREG (CN404 (29))
IC401
EVER 5V
PS401
VTR UNREG (CN404 (29))
5V REG
BATTERY IN DETECT
LI 3V
LITHIUM BATTERY PRE END DETECT
INITIAL RESET
Q401
IC406
CHARACTER GENERATOR
EVER 5V (IC401 ⑦)
FL 401 OSC FILTER
VDD
OSC 0
OSC 1
SCK
STB
DATA
PCL
H
V
DDS VOB
DDS VOW
DS VOB
DS VOW
CRTC CS
LI-46 BOARD (See Page 117)
LITHIUM BATTERY
LI 3V
CN516
CN407
ZOOM SW
BACK UP VDD
CG H
CR PULSE
DDS VOB
DDS VOW
SYSTEM RESET
VTR SCK
DATA TO SLV
DATA TO MSTR
CAM COSMO CS
SG CS
TG STBY I
FLD
PB V
CAM VD
FOCUS 1
FOCUS 2
CAMERA (1) (VC-147)
W405
ZOOM SWITCH UNIT (See Page 126)
W
T
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
AU-171 BOARD (See Page 125)
CN603
CN602
ZOOM SW
SS 5V (CN404 ⑤,⑧)
CR PULSE
CC DOWN

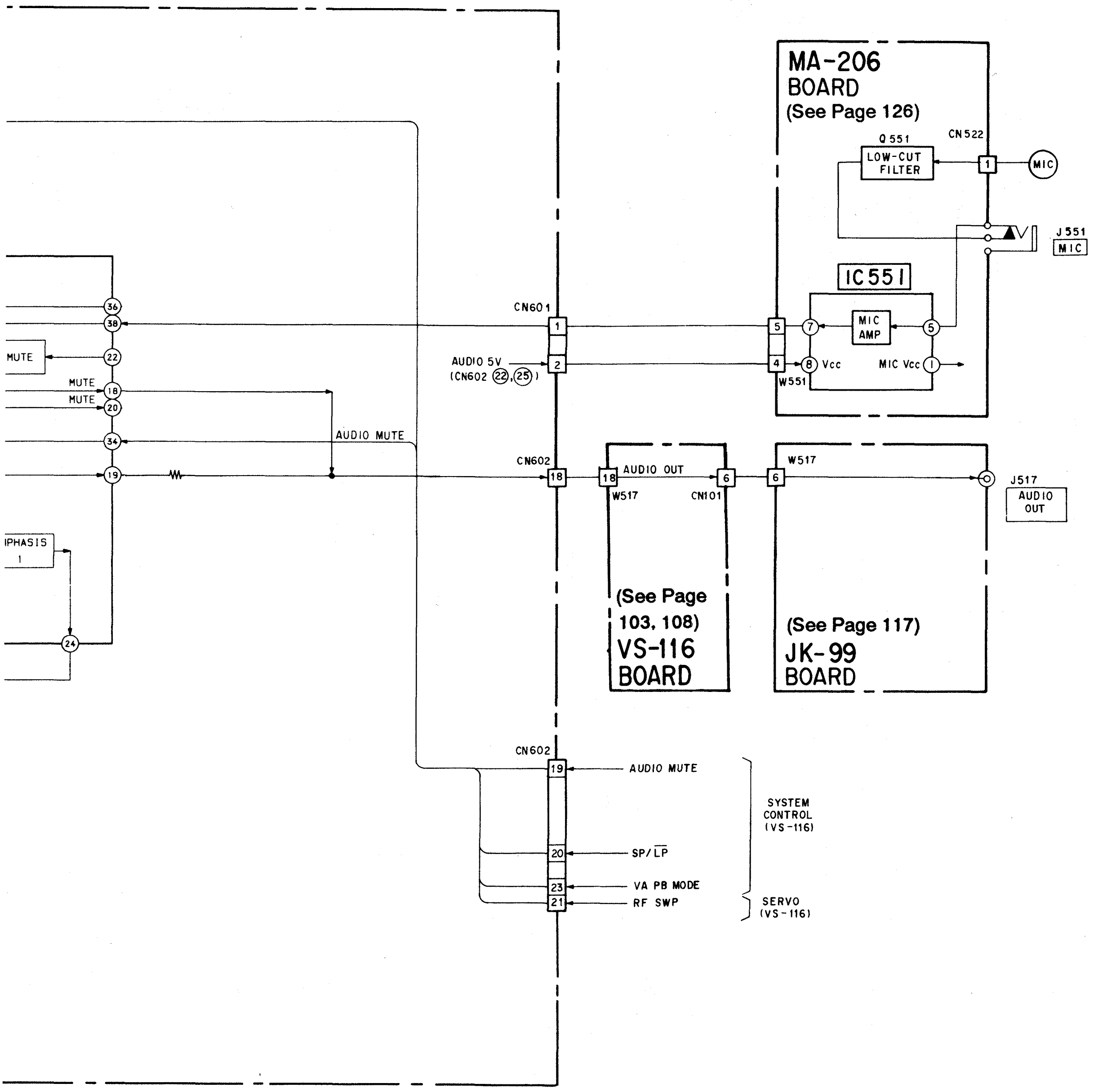

e 108)
IC403
MODE CONTROL (MASTER)
COM 0
COM 1
S3
S22
REMO CS
EEPROM CS
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
XT 2
XT 1
X402 33MHz
X2
X1
X401 4.19MHz
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
BATT IN
NC
VDD
RESET
LI PRE END
SCK
DATA TO SLEV
DATA TO MSTR
VTR COSMO CS
SYS RESET
SYSTEM SYNC
TG STBY I
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
SG CS
CRTC CS
VIDEO CS
VIDEO D/A CS
CC DOWN(K IN 7)
VTR DD ON
CAM DD ON
TALLY
IC405
EEPROM
SS 5V (CN404 ⑤,⑧)
VCC
CS
SCK
TO SLVE
TO MAST
VTR UNREG (CN404㉙)
X403
11.718MHz XTAL OSC
IC402
MECHANISM CONTROL
JACK IN/OUT DET
RESET
SCK
DATA TO MSTR
DATA TO SLEV
VTR COSMO CS
AVREF
AVDD
VDD
VPP
BATT SENS
XTAL
EXTAL
FLD
PB V (SYSTEM SYNC)
CAM VD
LANC IN
LANC OUT
UNLOAD
LOAD
LM LIM CONT
LM LIMIT DET
MSW 0
MSW 1
MSW 2
DEW
TOP SENS
END SENS
S REEL FG
T REEL FG
REEL HALL CONT
T/E LED ON
CC DOWN
ME/MP
REC PROOF
RP PB MODE
FE ON
SERVO
RF SW P
VTR SYNC
VI SWP
ME/MP
DS ON
JOG VD
JOG
VA PB MODE
CAM/LINE
VIDEO MUTE
SP/LP
SYNC DET OUT
VIDEO 0 SW
VIDEO 1 SW
AUDIO MUTE
AGC SLOW
EDIT
E MODE
E/L DET
H CHG
PB SP/LP DET
CLOG
IC410
LOADING MOTOR DRIVE
DEC2
DEC1
LIMIT EN
LIMIT OUT
VC
UNLOAD
LOAD
VR
Q409
5V REG
PS402
VTR UNREG (CN404㉙)
SS 5V (CN404⑤⑧)
CN406
Q405
LED DRIVE
SL-41 BOARD (See Page 121)
W522
W521
UNLOAD
LOAD
CN522
CN521
DEW SENS
TOP SENS
END SENS
MT 5V
Q521
TAPE TOP DETECT
TAPE END DETECT
IC501
WAVE SHAPER
Vcc
T/E LED
MSW 0
MSW 1
MSW 2
DEW SENS
CC DOWN
S REEL (−)
S REEL (+)
T REEL (−)
T REEL (+)
REEL HALL CONT
ME/MP
REC PROOF
MECHA CHASSIS (See Page 121)
LM-40 BOARD (See Page 121)
M903 LOADING MOTOR
CN002
CN003
MODE SWITCH
S001
FP-442 BOARD (See Page 121)
S005
DEW SENSOR
R009
Q001
TAPE TOP SENSOR
Q002
TAPE END SENSOR
D001
TAPE LED
S REEL FG SENSOR
T REEL FG SENSOR
CN001
S002
ME/MP
MP/MP-HG
REC PROOF
LS-33 BOARD (See Page 121)
PR PB MODE
FE ON
SP/LP
RF SW P
ME/MP
PB RF
VIDEO (2)
VTR SYNC
DS ON
JOG VD
JOG
VA PB MODE
VI SWP
CAM/LINE
V MUTE
SP/LP
VIDEO (1)
VIDEO CS
VIDEO D/A CS
DATA TO SLEV
SCK
EDIT
ATF CONT
CN401
VA PB MODE
SP/LP
RF SWP
AUDIO MUTE
AUDIO (AU-171)
IC404
SP/LP DETECT CLOG DETECT
PB SP/LP DETECT
CLOG DETECT
CR PULSE DETECT
RF DETECT
GCA
INTEGRATOR
AVDD
VDD
SS 5V (CN404⑤⑧)
PB RF
ATF CONT
CR PULSE
CC DOWN
CC DOWN
CR PULSE

3-8. AUDIO BLOCK DIAGRAM

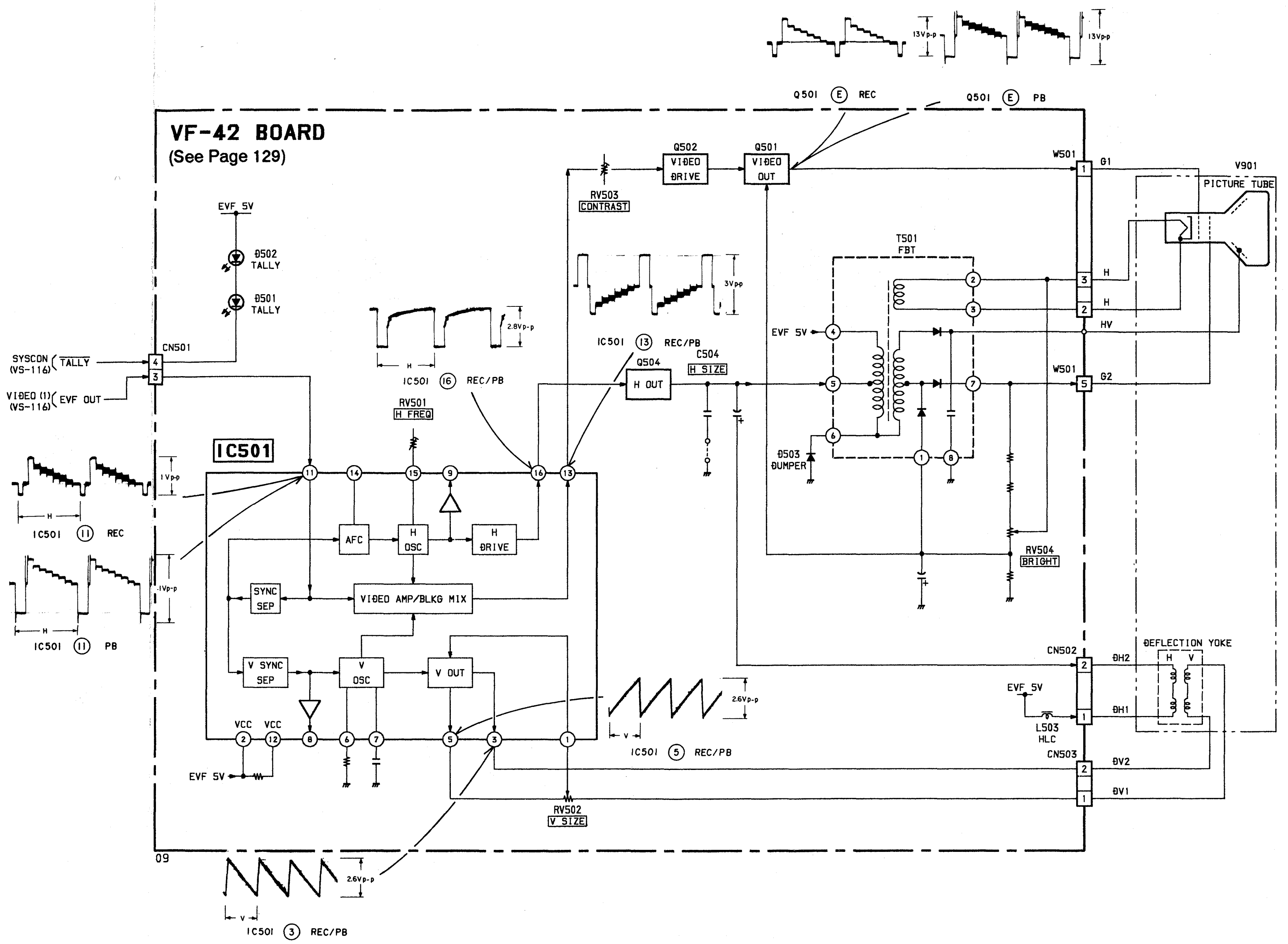

AU-171 BOARD
(See Page 125)
IC601
AFM PROCESS
VIDEO(2)
(VS-116)
PB RF
REC AFM RF
CN602
32
31
Y TRAP
1.5 DEV
REC ON
AUDIO 5V
(CN602 22, 25)
Vcc
RF AGC
AGC DET
BPF
LPF
LIM
DOC DET
PHASE COMP
(FM DEMOD)
VCO
(FM MOD)
CCA
1/M
1/N
NTSC/PAL
MUTE DET
S/H
DO
NOR
PB
REC
PG DOUBLE DELAY
MUTE OFF DELAY
RF SWP
VA PB MODE
SP/LP
AUDIO FADER
LP
SP
Z
FILTER CONTROL
VCO
EMP 2
I REF
V REF
1.5/1.7
1.5 IR
MUTE
FADE
AGC
LINE
CAM
LINE AMP
MOA
EMPHASIS 2
VCA
EMPHASIS 1
WEIGHT
DET
AUDIO MU
1.5 IR
1.5 DEV
AUDIO FADER
FSC
VIDEO (1)
(VS-116)
09

3-8. AUDIO BLOCK DIAGRAM

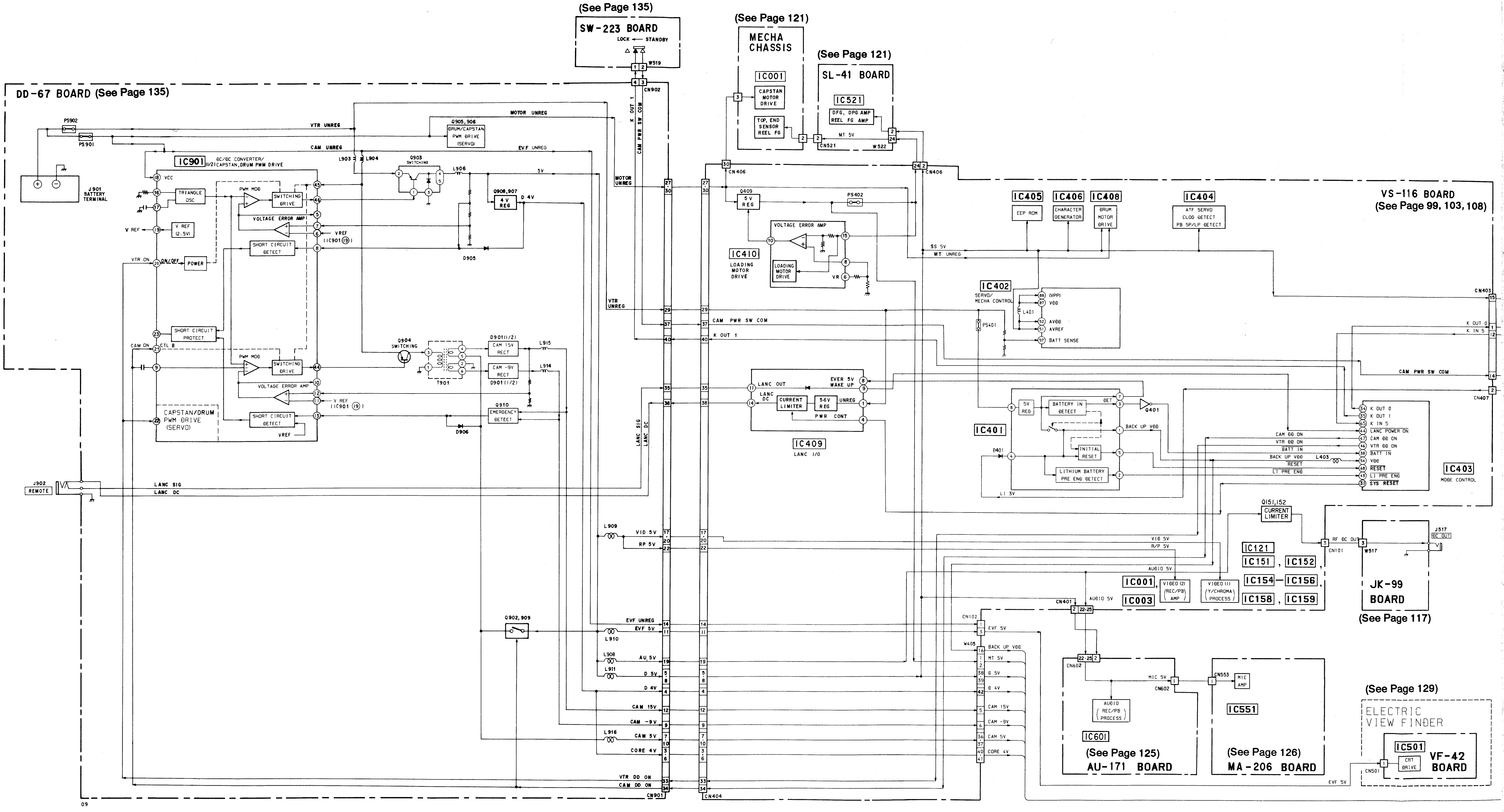

AU-171 BOARD
(See Page 125)
IC601
AFM PROCESS
VIDEO(2)
(VS-116)
PB RF
REC AFM RF
CN602
32
31
Y TRAP
1.5 DEV
AUDIO 5V
(CN602 ㉒, ㉕)
Vcc
RF AGC
AGC DET
BPF
DOC DET
LIM
PHASE COMP
(FM DEMOD)
LPF
MUTE DET
S/H
DO
NOR
MUTE OFF DELAY
PG DOUBLE DELAY
REC ON
VCO
(FM MOD)
CCA
PB
REC
1/M
1/N
NTSC/PAL
RF SWP
VA PB MODE
SP/$\overline{\text{LP}}$
AUDIO FADER
LP
SP
Z
FILTER CONTROL
I REF
LPF
BPF
VCO
EMP 2
V REF
1.5/$\overline{1.7}$
1.5 IR
MUTE
FADE
AGC
AGC DET
LINE
CAM
LINE AMP
MOA
EMPHASIS 2
VCA
EMPHASIS 1
WEIGHT
DET
AUDIO MU
1.5 IR
1.5 DEV
AUDIO FADER
FSC
VIDEO (1)
(VS-116)
09

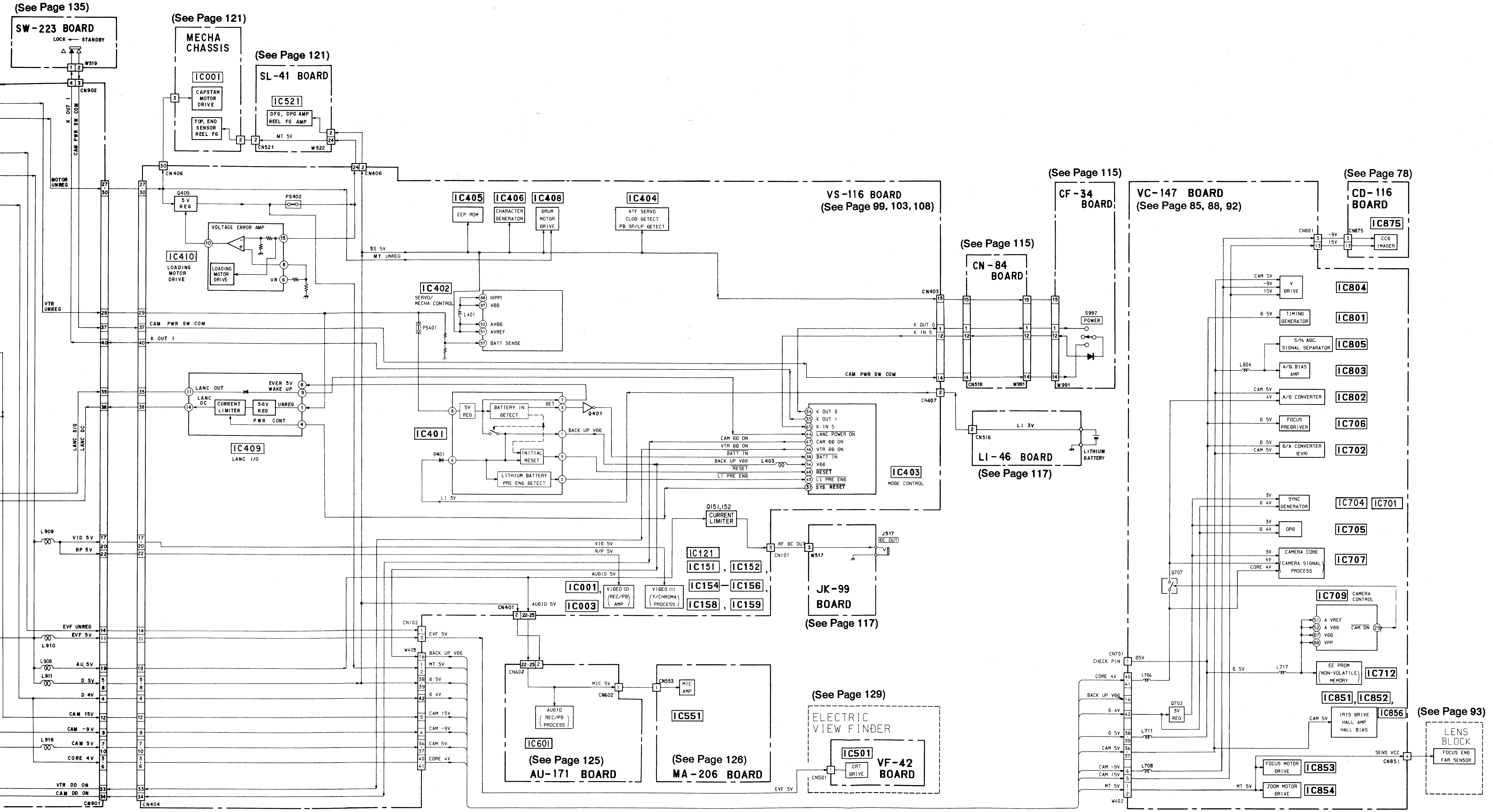

MA-206
BOARD
(See Page 126)
Q551
LOW-CUT FILTER
CN522
MIC
J551
MIC
IC551
MIC AMP
MIC Vcc
Vcc
W551
CN601
AUDIO 5V
(CN602 ㉒,㉕)
MUTE
AUDIO MUTE
CN602
AUDIO OUT
W517
CN101
J517
AUDIO OUT
(See Page 103, 108)
VS-116
BOARD
(See Page 117)
JK-99
BOARD
PHASIS
AUDIO MUTE
SP/LP
VA PB MODE
RF SWP
SYSTEM CONTROL (VS-116)
SERVO (VS-116)

3-9. EVF BLOCK DIAGRAM


VF-42 BOARD
(See Page 129)
Q501 Ⓔ REC
Q501 Ⓔ PB
13Vp-p
13Vp-p
Q502
VIDEO DRIVE
Q501
VIDEO OUT
RV503
CONTRAST
EVF 5V
D502
TALLY
D501
TALLY
SYSCON (VS-116) TALLY
VIDEO (1) (VS-116) EVF OUT
CN501
2.8Vp-p
IC501 ⑯ REC/PB
3Vp-p
IC501 ⑬ REC/PB
Q504
H OUT
C504
H SIZE
RV501
H FREQ
IC501
1Vp-p
IC501 ⑪ REC
IC501 ⑪ PB
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
VCC
EVF 5V
2.6Vp-p
IC501 ⑤ REC/PB
RV502
V SIZE
2.6Vp-p
IC501 ③ REC/PB
T501
FBT
EVF 5V
D503
DUMPER
RV504
BRIGHT
W501
G1
H
H
HV
G2
V901
PICTURE TUBE
DEFLECTION YOKE
H
V
CN502
DH2
DH1
EVF 5V
L503
HLC
CN503
DV2
DV1
09

3-10. POWER BLOCK DIAGRAM


(See Page 135)
SW-223 BOARD
LOCK ← STANDBY
W519
CN902
(See Page 121)
MECHA CHASSIS
IC001
CAPSTAN MOTOR DRIVE
TOP, END SENSOR REEL FG
(See Page 121)
SL-41 BOARD
IC521
DFG, DPG AMP REEL FG AMP
MT 5V
CN521
W522
DD-67 BOARD (See Page 135)
PS902
PS901
J901 BATTERY TERMINAL
VTR UNREG
CAM UNREG
MOTOR UNREG
EVF UNREG
Q905,906 DRUM/CAPSTAN PWM DRIVE (SERVO)
IC901 DC/DC CONVERTER/ (1/2)CAPSTAN, DRUM PWM DRIVE
L903
L904
Q903 SWITCHING
L906
5V
Q908,907 4V REG
D 4V
VCC
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF (2.5V)
V REF
VREF (IC901 ⑲)
SHORT CIRCUIT DETECT
D905
VTR ON
ON/OFF
POWER
SHORT CIRCUIT PROTECT
CAM ON
CTL B
VOLTAGE ERROR AMP
V REF (IC901 ⑲)
CAPSTAN/DRUM PWM DRIVE (SERVO)
Q904 SWITCHING
T901
D901(1/2) CAM 15V RECT
L915
L914
CAM -9V RECT
D901(1/2)
Q910 EMERGENCY DETECT
D906
VREF
J902 REMOTE
LANC SIG
LANC DC
L909
VID 5V
RP 5V
Q902,909
EVF UNREG
EVF 5V
L910
L908
L911
AU 5V
D 5V
D 4V
CAM 15V
CAM -9V
L916
CAM 5V
CORE 4V
VTR DD ON
CAM DD ON
CN901
K OUT 1
K SW COM
CAM PWR SW COM
MOTOR UNREG
VTR UNREG
CN404
CN406
Q409 5V REG
PS402
VOLTAGE ERROR AMP
IC410 LOADING MOTOR DRIVE
LOADING MOTOR DRIVE
VR
SS 5V
MT UNREG
IC405 EEP ROM
IC406 CHARACTER GENERATOR
IC408 DRUM MOTOR DRIVE
IC404 ATF SERVO CLOG DETECT PB SP/LP DETECT
VS-116 BOARD (See Page 99, 103, 108)
IC402 SERVO/ MECHA CONTROL
(VPP)
VDD
L401
AVDD
AVREF
BATT SENSE
PS401
CN403
K OUT 0
K IN 5
CAM PWR SW COM
CN407
LANC OUT
LANC DC
EVER 5V WAKE UP
CURRENT LIMITER
5.6V REG
UNREG
PWR CONT
IC409 LANC I/O
5V REG
BATTERY IN DETECT
DET
Q401
BACK UP VDD
IC401
D401
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
LI 3V
CAM DD ON
VTR DD ON
BATT IN
BACK UP VDD
L403
RESET
LI PRE END
K OUT 0
K OUT 1
K IN 5
LANC POWER ON
CAM DD ON
VTR DD ON
BATT IN
VDD
RESET
LI PRE END
SYS RESET
IC403 MODE CONTROL
Q151,152 CURRENT LIMITER
VID 5V
R/P 5V
AUDIO 5V
IC121
IC151, IC152,
IC154–IC156,
IC158, IC159
IC001, VIDEO (2) (REC/PB) AMP
IC003
VIDEO (1) (Y/CHROMA) PROCESS
CN401
AUDIO 5V
RF DC OUT
CN101
J517 DC OUT
W517
JK-99 BOARD
(See Page 117)
CN102
EVF 5V
W405
BACK UP VDD
MT 5V
D 5V
D 4V
CAM 15V
CAM -9V
CAM 5V
CORE 4V
CN602
MIC 5V
AUDIO REC/PB PROCESS
IC601
(See Page 125)
AU-171 BOARD
CN553
MIC AMP
IC551
(See Page 126)
MA-206 BOARD
(See Page 129)
ELECTRIC VIEW FINDER
IC501
CRT DRIVE
VF-42 BOARD
CN501
EVF 5V
09


(See Page 135)
SW-223 BOARD
LOCK ← STANDBY
W519
CN902
K OUT 1
CAM PWR SW COM
MOTOR UNREG
VTR UNREG
LANC SIG
LANC DC
(See Page 121)
MECHA CHASSIS
IC001
CAPSTAN MOTOR DRIVE
TOP, END SENSOR REEL FG
(See Page 121)
SL-41 BOARD
IC521
DFG, DPG AMP REEL FG AMP
MT 5V
CN521
W522
CN406
Q409
5V REG
PS402
VOLTAGE ERROR AMP
IC410
LOADING MOTOR DRIVE
VR
SS 5V
MT UNREG
CAM PWR SW COM
K OUT 1
IC405
EEP ROM
IC406
CHARACTER GENERATOR
IC408
DRUM MOTOR DRIVE
IC404
ATF SERVO CLOG DETECT PB SP/LP DETECT
IC402
SERVO/ MECHA CONTROL
PS401
L401
(VPP)
VDD
AVDD
AVREF
BATT SENSE
VS-116 BOARD
(See Page 99, 103, 108)
LANC OUT
LANC DC
EVER 5V
WAKE UP
CURRENT LIMITER
5.6V REG
UNREG
PWR CONT
IC409
LANC I/O
IC401
5V REG
BATTERY IN DETECT
DET
Q401
BACK UP VDD
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
D401
LI 3V
CAM DD ON
VTR DD ON
BATT IN
BACK UP VDD
L403
RESET
LI PRE END
K OUT 0
K OUT 1
K IN 5
LANC POWER ON
CAM DD ON
VTR DD ON
BATT IN
VDD
RESET
LI PRE END
SYS RESET
IC403
MODE CONTROL
CN403
K OUT 0
K IN 5
CAM PWR SW COM
CN407
(See Page 115)
CN-84 BOARD
CN518
W991
(See Page 115)
CF-34 BOARD
S997
POWER
W991
LI 3V
CN516
LI-46 BOARD
LITHIUM BATTERY
(See Page 117)
Q151,152
CURRENT LIMITER
RF DC OUT
CN101
W517
J517
DC OUT
JK-99 BOARD
(See Page 117)
L909
VID 5V
RP 5V
VID 5V
R/P 5V
AUDIO 5V
IC121
IC151, IC152,
IC154–IC156,
IC158, IC159
IC001, IC003
VIDEO (2) (REC/PB) AMP
VIDEO (1) (Y/CHROMA) PROCESS
CN401
AUDIO 5V
EVF UNREG
EVF 5V
L910
L908
AU 5V
L911
D 5V
D 4V
CAM 15V
CAM -9V
L916
CAM 5V
CORE 4V
VTR DD ON
CAM DD ON
CN901
CN404
CN102
W405
EVF 5V
BACK UP VDD
MT 5V
D 5V
D 4V
CAM 15V
CAM -9V
CAM 5V
CORE 4V
CN602
MIC 5V
AUDIO REC/PB PROCESS
IC601
(See Page 125)
AU-171 BOARD
CN553
MIC AMP
IC551
(See Page 126)
MA-206 BOARD
(See Page 129)
ELECTRIC VIEW FINDER
IC501
CRT DRIVE
VF-42 BOARD
CN501
EVF 5V
VC-147 BOARD
(See Page 85, 88, 92)
(See Page 78)
CD-116 BOARD
CN801
CN875
-9V
15V
IC875
CCD IMAGER
CAM 5V
V DRIVE
IC804
TIMING GENERATOR
IC801
S/H, AGC, SIGNAL SEPARATOR
IC805
L804
A/D, BIAS AMP
IC803
A/D CONVERTER
IC802
FOCUS PREDRIVER
IC706
D/A CONVERTER (EVR)
IC702
SYNC GENERATOR
IC704
IC701
OPD
IC705
CAMERA CORE /CAMERA SIGNAL PROCESS
IC707
CORE 4V
Q707
IC709
CAMERA CONTROL
A VREF
A VDD
VDD
VPP
CAM ON
CN701
CHECK PIN
D5V
CORE 4V
L706
L717
EE PROM (NON-VOLATILE) MEMORY
IC712
BACK UP VDD
Q702
3V REG
IC851, IC852, IC856
IRIS DRIVE HALL AMP HALL BIAS
L711
CAM 5V
L708
CAM -9V
CAM 15V
MT 5V
W402
FOCUS MOTOR DRIVE
IC853
ZOOM MOTOR DRIVE
IC854
SENS VCC
CN851
(See Page 93)
LENS BLOCK
FOCUS END FAR SENSOR

3-13. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-116 BOARD: µPD75316GF-463-3B9)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	S12	S12	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
2	S13	S13	O		
3	S14	S14	O		
4	S15	S15	O		
5	S16	S16	O		
6	S17	S17	O		
7	S18	S18	O		
8	S19	S19	O		
9	S20	S20	O		
10	S21	S21	O		
11	S22	S22	O		
12	S23	S23	O		
13	S24/BP0	$\overline{\text{EEPROM CS}}$	O		Chip select signal to EEPROM (IC406 on VS-116 board). 1/2V period "L" pulse.
14	S25/BP1	N.C	O		Not used.
15	S26/BP2	TG STBY 1	O	CAM	Power save control signal to timing generator (IC801 on VC-147 board). Normally "L".
16	S27/BP3		O		N.C.
17	S28/BP4	$\overline{\text{CS TITLE}}$	O	CAM	Not used.
18	S29/BP5	REMO CS	O		Chip select signal to sircs remote controller (IC907 on VS-116 board). 1V period "L" pulse.
19	S30/BP6	S RAM CS	O		Not used.
20	S31/BP7	$\overline{\text{CAM COSM CS}}$	O	CAM	Chip select signal to camera controller (IC709 on VC-147 board). 1V period "L" pulse.
21	COM0	COM 0	O		Common terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
22	COM1	COM 1	O		
23	COM2	COM 2	O		
24	COM3	COM 3	O		
25	BIAS	BIAS	O		Bias voltage output for voltage deviding resistor. Not used.
26	VLC0	VCC 0	I		Power source 0 input Power source for LCD dirve. Not used.
27	VLC1	VCC 1	I		Power source 1 input
28	VLC2	VCC 2	I		Power source 2 input
29	P40	K OUT 4	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
30	P41	K OUT 5	O	all	
31	P42	$\overline{\text{SYS RESET}}$	O	all	Output signal to reset each IC when power is turned on. Normally "H".
32	P43	$\overline{\text{TALLY}}$	O	EVF	Tally LED ON/OFF signal. "L": ON.
33	VSS	VSS			GND
34	P50	K OUT 0	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
35	P51	K OUT 1	O	all	
36	P52	K OUT 2	O	all	
37	P53	K OUT 3	O	all	
38	P00/INT4	$\overline{\text{BATT IN}}$	I		Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select.
39	P01/$\overline{\text{SCK}}$	$\overline{\text{SCK}}$	O	all	Serial clock output terminal, Serial clock (2 μS) communication.
40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 μS) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 μS) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-116 board).

Pin No.	Port Name	Signal	I/O	Connection	Function
43	P11/INT1	$\overline{\text{LI PRE END}}$	I		(Edge detection vector interruption), Lithium PRE END is selected with "L".
44	P12/INT2	$\overline{\text{LANC PWR ON}}$	I		Power on signal input from wired remote control. "L" when power switch pressed.
45	P13/TIO	TITLE BUSY	I	CAM	Not used.
46	P20/PT00	VTR DD ON	O	PS	VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position.
47	P21	CAM DD ON	O	PS	CAMERA power source (CAM 5V, +15V, –9V) control signal. "H" when power switch is in "CAMERA" position.
48	P22/PCL	$\overline{\text{VIDEO D/A CS}}$	O	VA	Serial data load signal to video circuit EVR (IC156, 158 on VS-116 board). 1V period "H" pulse.
49	P23/BUZ	BEEP	O		Not used.
50	P30/LCDCL	$\overline{\text{VIDEO CS}}$	O	VA	Chip select signal to Y process IC (IC151 on VS-116 board). 1V period "L" pulse.
51	P31/SYNC	$\overline{\text{VTR COSM CS}}$	O		Chip select signal to mechanism controller (IC402 on VS-116 board). 1V period "L" pulse.
52	P32	$\overline{\text{SG CS}}$	O	CAM	Chip select signal to sync generator (IC704 on VC-147 board). 1V period "L" pulse.
53	P33	$\overline{\text{CRTC CS}}$	O	CAM	Strobe signal for character generator (IC406 on VS-116 board). 1V period "H" pulse.
54	VDD	VDD			VDD
55	XT1	XT1	I		SUB system clock. 32 kHz oscillation terminal.
56	XT2	XT2			
57	N.C.	N.C.			N.C.
58	X1	X1	I		Main system clock. 4.19 MHz oscillation terminal.
59	X2	X2	I		
60	P60/KK0	K IN 0	I	all	KEY matrix input. 1V period "L" pulse input when corresponding key is pressed. "H" when other case.
61	P61/KR1	K IN 1	I	all	
62	P62/KR2	K IN 2	I	all	
63	P63/KR3	K IN 3	I	all	
64	P70/KR4	K IN 4	I	all	
65	P71/KP5	K IN 5	I	all	
66	P72/KP6	K IN 6	I	all	
67	P73/KP7	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment lock switch input. "L": Lock.
68	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	I		System reset input. "L": Reset, Normally: "H".
69	S0	CLK CHK	O		N.C.
70	S1	S1	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
71	S2	S2	O		
72	S3	S3	O		
73	S4	S4	O		
74	S5	S5	O		
75	S6	S6	O		
76	S7	S7	O		
77	S8	S8	O		
78	S9	S9	O		
79	S10	S10	O		
80	S11	S11	O		

3-14. INTERFACE

3-14-1. System Control – Video/Audio Block Interface (VS-116 BOARD)

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *3		REC *4	REC *4 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
SP/$\overline{\text{LP}}$	O	IC402 (91)	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*1	*2	*2	*6	H/L	H/L	*6	*2	*2	*2	*2
VA PB MODE	O	IC402 (95)	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC402 ㊻	L	L	L	H	H	L	H	H	H	H	H	L	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE	O	IC402 ⑳	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15
CAM/$\overline{\text{LINE}}$	O	IC402 ㉖	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC402 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	L	L	L	L	*5	*5	*5	*5
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{FE ON}}$	O	IC402 ②	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
RF SWP	O	IC402 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC402 ④	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
$\overline{\text{VIDEO CS}}$	O	IC403 ㊿	V period "L" pulse																					
$\overline{\text{VIDEO D/A CS}}$	O	IC403 ㊽	V period 'H" pulse																					
DATA TO MSTR	I	IC403 ㊶	V period "L" pulse																					
DATA TO SLVE	O	IC403 ㊵	V period pulse train																					
$\overline{\text{SCK}}$	I	IC403 ㊴	V period "H" pulse																					
PB SP/$\overline{\text{LP}}$ DET	I	IC402 (65)	L	*10	*10	*10	*10	L	*10	*10	*10			*10	L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC402 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC402 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)
*13. "H" during camera mode load/unload.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.

3-14-2. System Control – Servo Block Interface

40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 µS) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 µS) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-116 board).

77	S8	S8	O	
78	S9	S9	O	
79	S10	S10	O	
80	S11	S11	O	

3-14. INTERFACE

3-14-1. System Control – Video/Audio Block Interface (VS-116 BOARD)

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *3		REC *4	REC *4 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
SP/$\overline{\text{LP}}$	O	IC402 (91)	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*1	*2	*2	*6	H/L	H/L	*6	*2	*2	*2	*2
VA PB MODE	O	IC402 (95)	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC402 ㊻	L	L	L	H	H	L	H	H	H	H	H	L	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE	O	IC402 ⑳	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15
CAM/$\overline{\text{LINE}}$	O	IC402 ㉖	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC402 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	L	L	L	L	*5	*5	*5	*5
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{FE ON}}$	O	IC402 ②	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
RF SWP	O	IC402 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC402 ④	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
$\overline{\text{VIDEO CS}}$	O	IC403 ㊿	V period "L" pulse																					
$\overline{\text{VIDEO D/A CS}}$	O	IC403 ㊽	V period 'H" pulse																					
DATA TO MSTR	I	IC403 ㊶	V period "L" pulse																					
DATA TO SLVE	O	IC403 ㊵	V period pulse train																					
$\overline{\text{SCK}}$	I	IC403 ㊴	V period "H" pulse																					
PB SP/$\overline{\text{LP}}$ DET	I	IC402 (65)	L	*10	*10	*10	*10	L	*10	*10	*10			*10	L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC402 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC402 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)
*13. "H" during camera mode load/unload.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.

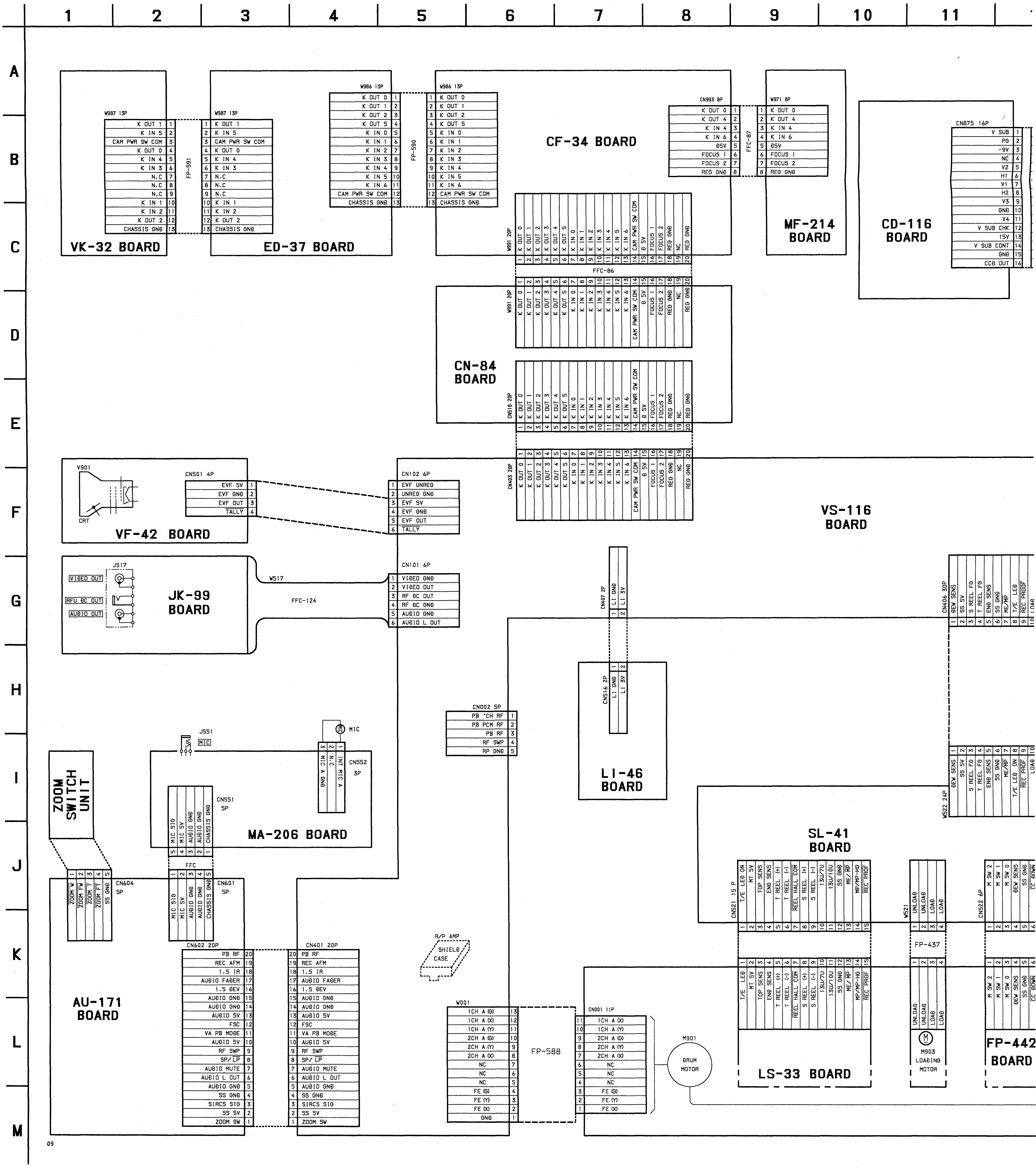
3-14-2. System Control – Servo Block Interface

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC402 (60)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC402 (59)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC402 (58)	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC402 (66)	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC402 (67)	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC402 (68),(75)	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC402 (99)	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	H	L	L	H	H	H	H	H
REF PILOT	O	IC402 (83)	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM REV *10	O	IC402 ㉝	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ $\overline{\text{RVS}}$	O	IC402 (100)	L	H	L	H	L	H	H	L	L	*8	*8	H	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC402 (74)	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC402 (73)	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
$\overline{\text{LM LIM CONT}}$ *11	O	IC402 ㉛	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC402 (81)	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. Inputting waveform which is similar to sine wave according to reel rotation.
*2. ATF error voltage input
*3. One PG pulse input per one drum rotation, approx. 25 Hz.
*4. 12 FG pulses input per one drum rotation, approx. 300 Hz.
*5. 520 FG pulses input per one capstan rotation. Approx. 1388 Hz when REC/PB (SP). 694 Hz when PB (LP).
*6. Four frequencies output synchronized with drum rotation. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 µsec period PWM signal
*10. Normally "H". Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search button pressed when playback pause mode.
*14. Mode for adjustment.

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM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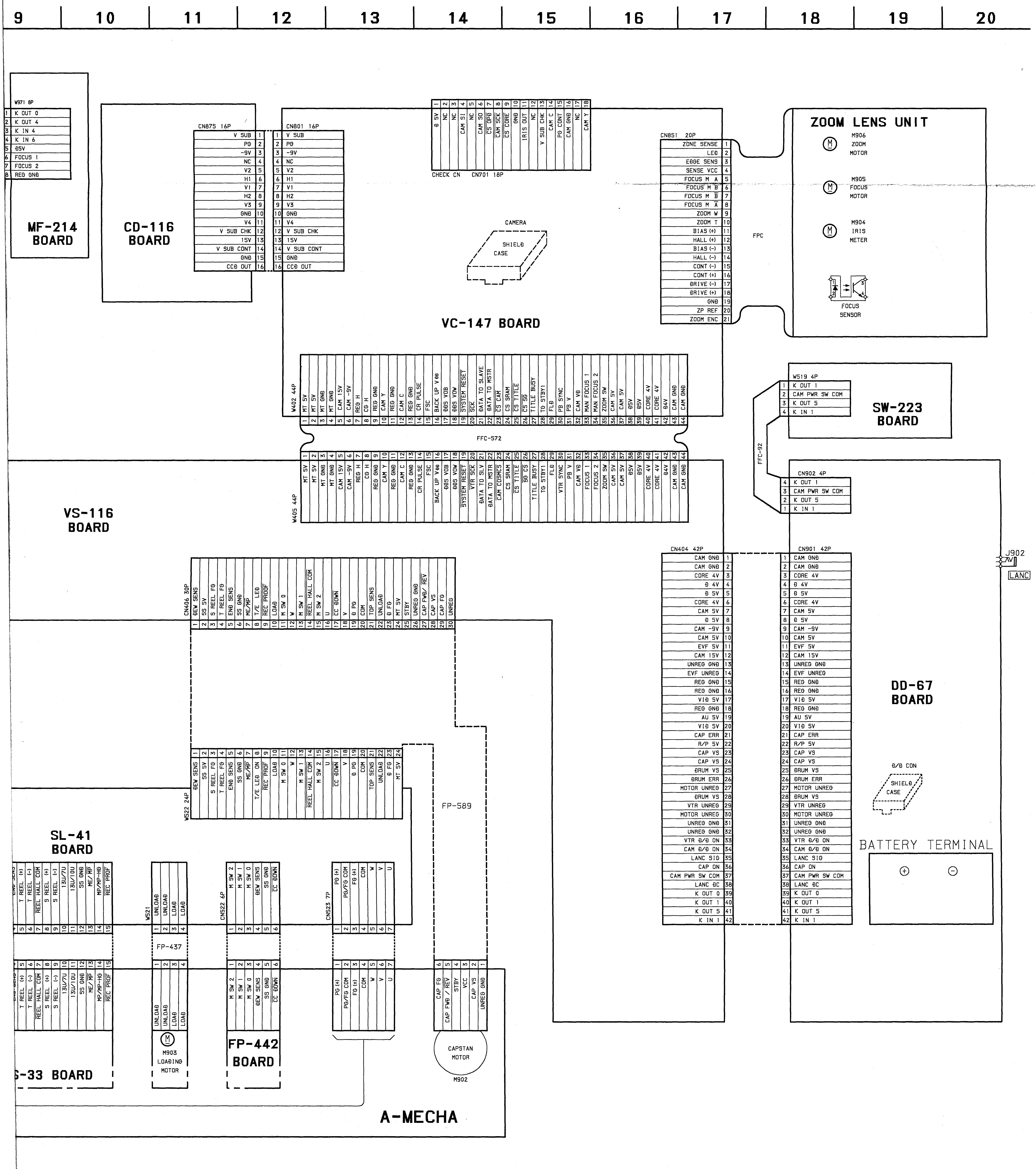
A
B
C
D
E
F
G
H
I
J
K
L
M
VK-32 BOARD
W987 13P
FP-591
ED-37 BOARD
W986 13P
FP-590
CF-34 BOARD
CN993 8P
FFC-87
W971 8P
MF-214 BOARD
CN875 16P
CD-116 BOARD
W991 20P
FFC-86
CN-84 BOARD
CN518 20P
CN403 20P
V901
CRT
CN501 4P
VF-42 BOARD
CN102 6P
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
JK-99 BOARD
W517
FFC-124
CN101 6P
VS-116 BOARD
CN407 2P
CN516 2P
LI-46 BOARD
CN406 30P
W522 24P
CN002 5P
J551
MIC
CN552 3P
CN551 5P
MA-206 BOARD
ZOOM SWITCH UNIT
FFC
CN604 5P
CN601 5P
SL-41 BOARD
CN521 15P
W521
CN522 6P
FP-437
AU-171 BOARD
CN602 20P
CN401 20P
R/P AMP
SHIELD CASE
W001
FP-588
CN001 11P
M901
DRUM MOTOR
LS-33 BOARD
M903
LOADING MOTOR
FP-442 BOARD
09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10
11
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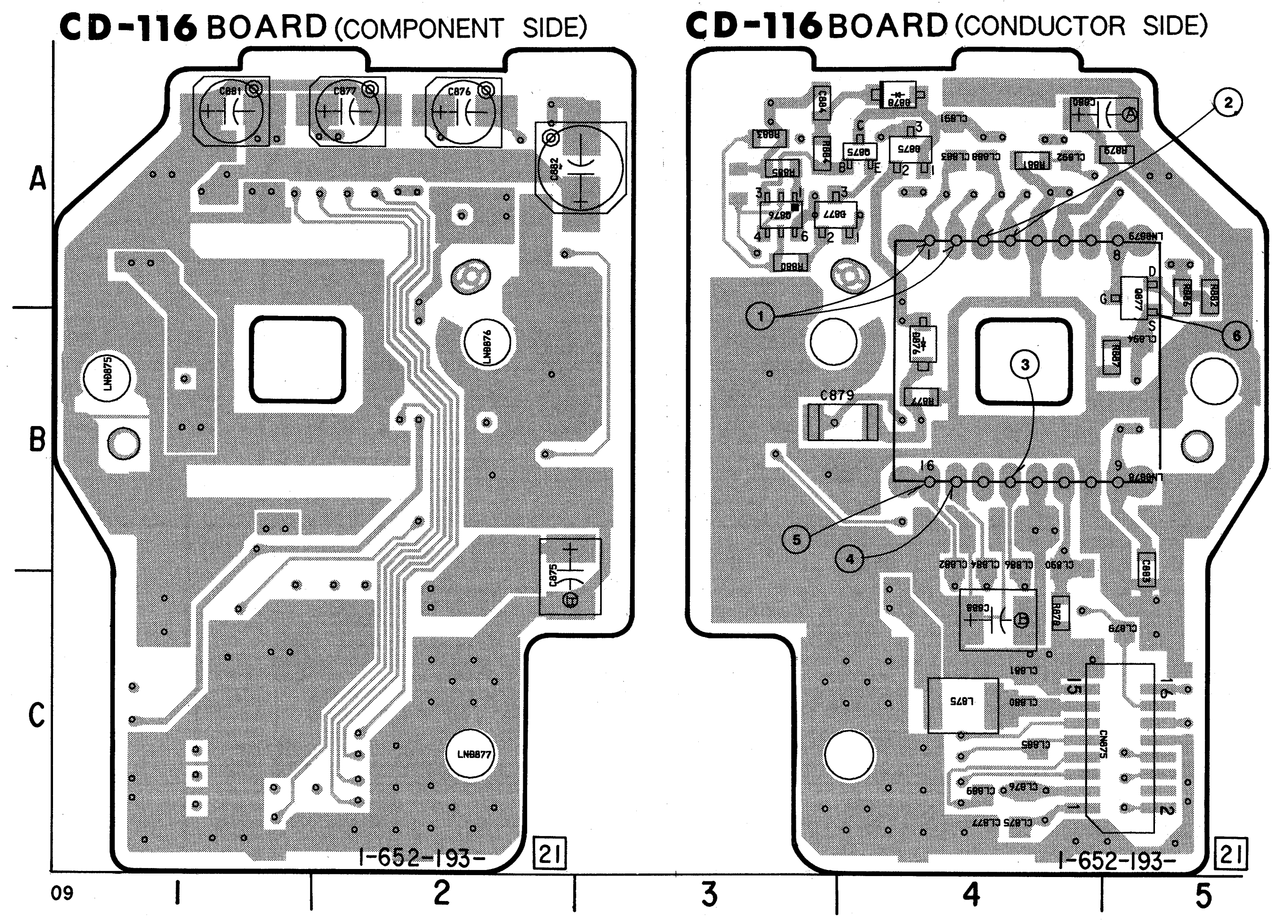
13
14
15
16
17
18
19
20
MF-214 BOARD
W971 8P
1 K OUT 0
2 K OUT 4
3 K IN 4
4 K IN 6
5 ƟSV
6 FOCUS 1
7 FOCUS 2
8 REG GND
CD-116 BOARD
CN875 16P
V SUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
V SUB CHK 12
15V 13
V SUB CONT 14
GND 15
CCD OUT 16
CN801 16P
1 V SUB
2 PG
3 -9V
4 NC
5 V2
6 H1
7 V1
8 H2
9 V3
10 GND
11 V4
12 V SUB CHK
13 15V
14 V SUB CONT
15 GND
16 CCD OUT
CHECK CN
CN701 18P
1 D 5V
2 NC
3 NC
4 CAM SI
5 NC
6 CAM SO
7 CS DPD
8 CAM SCK
9 CS CORE
10 GND
11 IRIS OUT
12 NC
13 V SUB CHK
14 CAM C
15 PG CONT
16 CAM GND
17 NC
18 CAM Y
CAMERA
SHIELD CASE
VC-147 BOARD
CN851 20P
ZONE SENSE 1
LED 2
EDGE SENS 3
SENSE VCC 4
FOCUS M A 5
FOCUS M B 6
FOCUS M B̄ 7
FOCUS M Ā 8
ZOOM W 9
ZOOM T 10
BIAS (+) 11
HALL (+) 12
BIAS (-) 13
HALL (-) 14
CONT (-) 15
CONT (+) 16
DRIVE (-) 17
DRIVE (+) 18
GND 19
ZP REF 20
ZOOM ENC 21
FPC
ZOOM LENS UNIT
M906 ZOOM MOTOR
M905 FOCUS MOTOR
M904 IRIS METER
FOCUS SENSOR
W402 44P
1 MT 5V
2 MT 5V
3 MT GND
4 MT GND
5 CAM 15V
6 CAM -9V
7 REG H
8 CG H
9 REG GND
10 CAM Y
11 REG GND
12 CAM C
13 REG GND
14 CR PULSE
15 FSC
16 BACK UP VDD
17 DD5 VDD
18 DD5 VDW
19 SYSTEM RESET
20 SCK
21 DATA TO SLAVE
22 DATA TO MSTR
23 CS CAM
24 CS SRAM
25 CS TITLE
26 CS SG
27 TITLE BUSY
28 TG STBY1
29 FLD
30 PB SYNC
31 PB V
32 CAM VD
33 MAN FOCUS 1
34 MAN FOCUS 2
35 ZOOM SW
36 CAM 5V
37 CAM 5V
38 D5V
39 D5V
40 CORE 4V
41 CORE 4V
42 D4V
43 CAM GND
44 CAM GND
FFC-572
W405 44P
1 MT 5V
2 MT 5V
3 MT GND
4 MT GND
5 CAM 15V
6 CAM -9V
7 REG H
8 CG H
9 REG GND
10 CAM Y
11 REG GND
12 CAM C
13 REG GND
14 CR PULSE
15 FSC
16 BACK UP VDD
17 DD5 VDD
18 DD5 VDW
19 SYSTEM RESET
20 VTR SCK
21 DATA TO SLV
22 DATA TO MSTR
23 CAM CDSMCS
24 CS SRAM
25 CS TITLE
26 SG CS
27 TITLE BUSY
28 TG STBY1
29 FLD
30 VTR SYNC
31 PB V
32 CAM VD
33 FOCUS 1
34 FOCUS 2
35 ZOOM SW
36 CAM 5V
37 CAM 5V
38 D5V
39 D5V
40 CORE 4V
41 CORE 4V
42 D4V
43 CAM GND
44 CAM GND
SW-223 BOARD
W519 4P
1 K OUT 1
2 CAM PWR SW COM
3 K OUT 5
4 K IN 1
FFC-92
CN902 4P
4 K OUT 1
3 CAM PWR SW COM
2 K OUT 5
1 K IN 1
VS-116 BOARD
CN404 42P
CAM GND 1
CAM GND 2
CORE 4V 3
D 4V 4
D 5V 5
CORE 4V 6
CAM 5V 7
D 5V 8
CAM -9V 9
CAM 5V 10
EVF 5V 11
CAM 15V 12
UNREG GND 13
EVF UNREG 14
REG GND 15
REG GND 16
VID 5V 17
REG GND 18
AU 5V 19
VID 5V 20
CAP ERR 21
R/P 5V 22
CAP VS 23
CAP VS 24
DRUM VS 25
DRUM ERR 26
MOTOR UNREG 27
DRUM VS 28
VTR UNREG 29
MOTOR UNREG 30
UNREG GND 31
UNREG GND 32
VTR D/D ON 33
CAM D/D ON 34
LANC SIG 35
CAP ON 36
CAM PWR SW COM 37
LANC DC 38
K OUT 0 39
K OUT 1 40
K OUT 5 41
K IN 1 42
CN901 42P
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VID 5V
18 REG GND
19 AU 5V
20 VID 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39 K OUT 0
40 K OUT 1
41 K OUT 5
42 K IN 1
J902
LANC
DD-67 BOARD
D/D CON
SHIELD CASE
BATTERY TERMINAL
⊕
⊖
CN406 30P
1 DEW SENS
2 SS 5V
3 S REEL FG
4 T REEL FG
5 END SENS
6 SS GND
7 ME/MP
8 T/E LED
9 REC PROOF
10 LOAD
11 M SW 0
12 W
13 M SW 1
14 REEL HALL COM
15 M SW 2
16 U
17 CC DOWN
18 V
19 D PG
20 COM
21 TOP SENS
22 UNLOAD
23 D FG
24 MT 5V
25 STBY
26 UNREG GND
27 CAP FWD/REV
28 CAP VS
29 CAP FG
30 UNREG
W522 24P
1 DEW SENS
2 SS 5V
3 S REEL FG
4 T REEL FG
5 END SENS
6 SS GND
7 ME/MP
8 T/E LED ON
9 REC PROOF
10 LOAD
11 M SW 0
12 W
13 M SW 1
14 REEL HALL COM
15 M SW 2
16 U
17 CC DOWN
18 V
19 D PG
20 COM
21 TOP SENS
22 UNLOAD
23 D FG
24 MT 5V
FP-589
SL-41 BOARD
END SENS
T REEL (+)
T REEL (-)
REEL HALL COM
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
ME/MP
MP/MP-HG
REC PROOF
W521
UNLOAD
UNLOAD
LOAD
LOAD
FP-437
CN522 6P
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
CN523 7P
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
S-33 BOARD
M903 LOADING MOTOR
FP-442 BOARD
CAP FG
CAP FWD / REV
STBY
VCC
CAP VS
UNREG GND
CAPSTAN MOTOR
M902
A-MECHA

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

CD-116 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-116 BOARD: 1000 series —


CD-116 BOARD (COMPONENT SIDE)
CD-116 BOARD (CONDUCTOR SIDE)
A
B
C
09
1
2
3
4
5
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21
C881
C877
C876
LN8875
LN8876
LN8877
C879
L875
CN875
IC875
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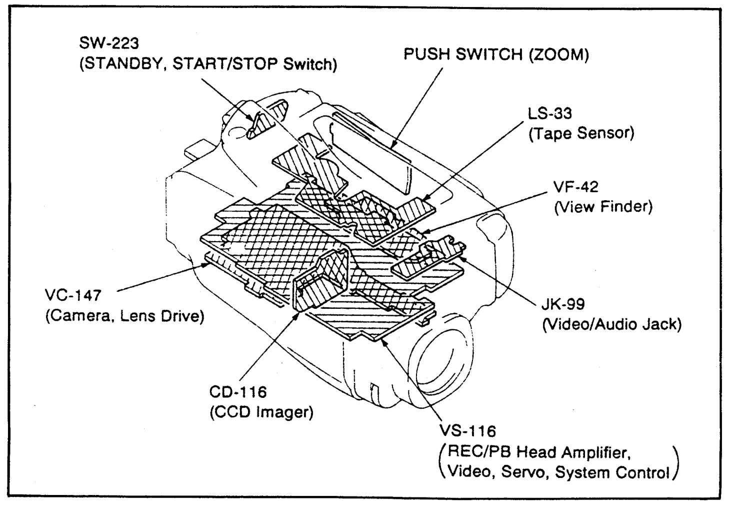
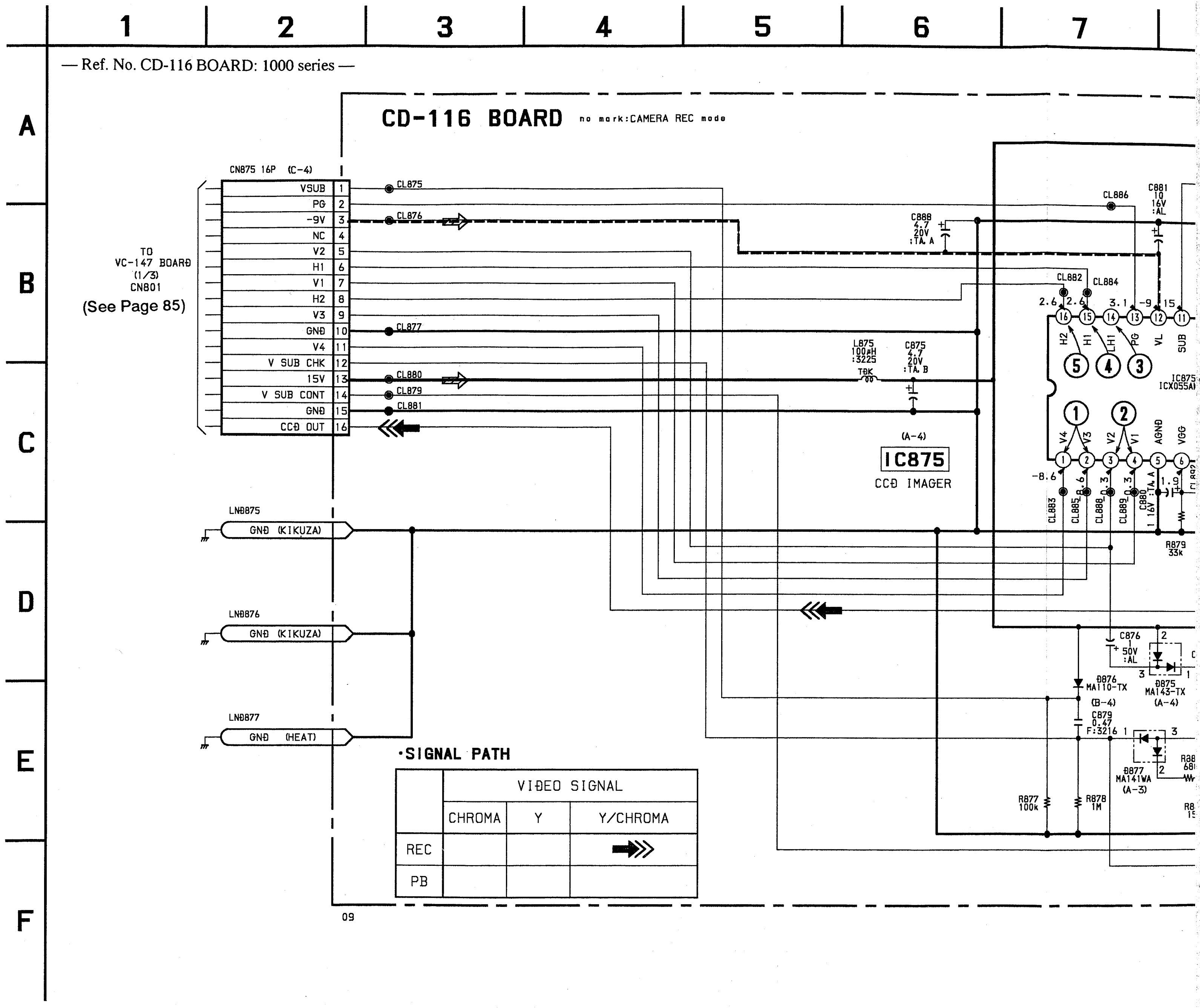

SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier,
Video, Servo, System Control)

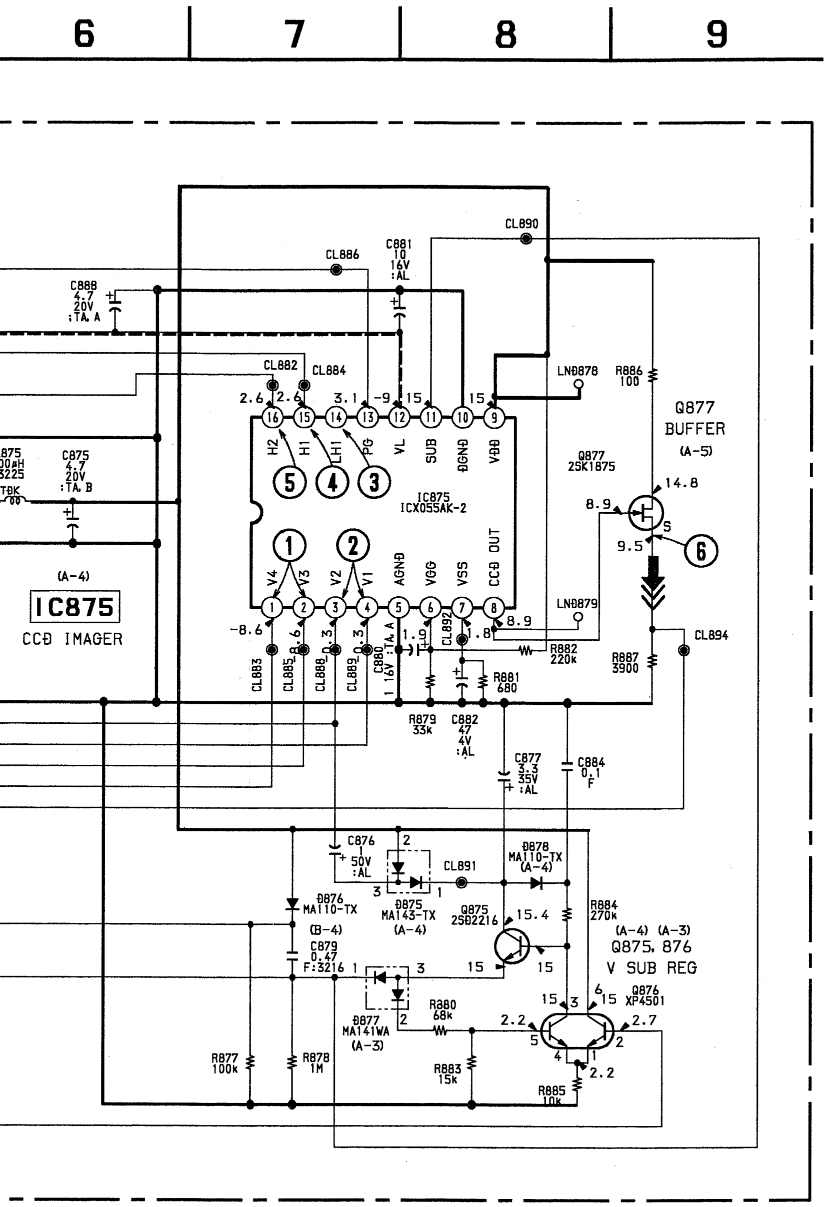
CD-116 (CCD IMAGER) SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
A
B
C
D
E
F
— Ref. No. CD-116 BOARD: 1000 series —
CD-116 BOARD
no mark:CAMERA REC mode
CN875 16P (C-4)
VSUB
PG
-9V
NC
V2
H1
V1
H2
V3
GND
V4
V SUB CHK
15V
V SUB CONT
GND
CCD OUT
TO
VC-147 BOARD
(1/3)
CN801
(See Page 85)
CL875
CL876
CL877
CL880
CL879
CL881
C888
4.7
20V
:TA A
L875
100μH
:3225
C875
4.7
20V
:TA B
(A-4)
IC875
CCD IMAGER
CL886
C881
10
16V
:AL
CL882
CL884
IC875
ICX055AK
LN8875
GND (KIKUZA)
LN8876
GND (KIKUZA)
LN8877
GND (HEAT)
C876
50V
:AL
D876
MA110-TX
(B-4)
D875
MA143-TX
(A-4)
C879
0.47
F:3216
D877
MA141WA
(A-3)
R877
100k
R878
1M
R879
33K
09
•SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB

Note on the CCD Imager replacement

- Some of this units require the correction data by the CCD imager (IC875 on CD-116 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-147 board), and also written on the CCD data label put on the shield case (upper) of the DD-67 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.

- The CCD imag
  CD-116 board s
  When replacing
  from the old bo
- Perform all adj
  imager has been
- Handle the CCI
  may be broken l
  Also, prevent t
  and strong light

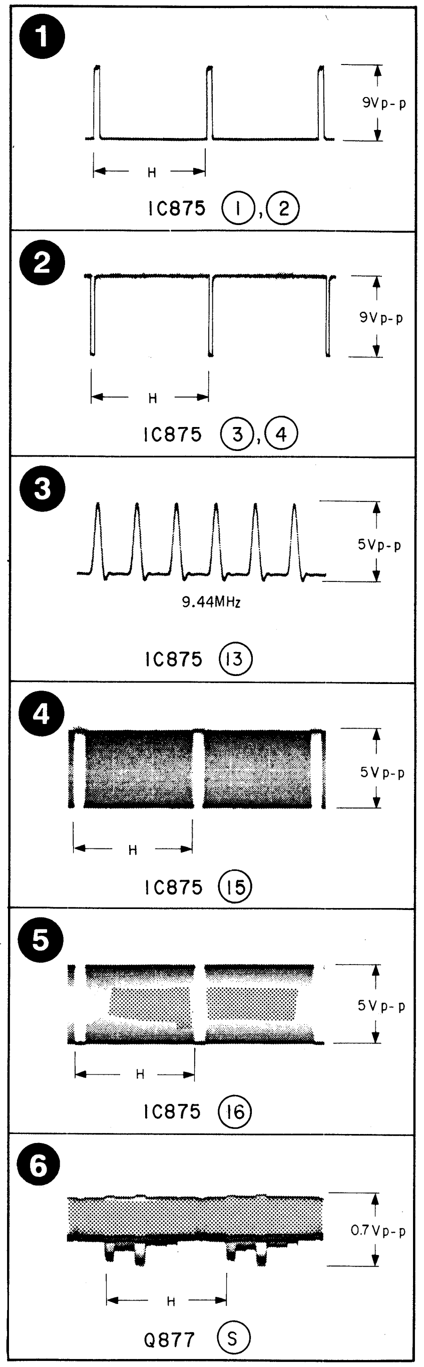

6
7
8
9
CL890
CL886
C881 10 16V :AL
C888 4.7 20V :TA A
CL882
CL884
LN8878
R886 100
Q877 BUFFER (A-5)
Q877 2SK1875
IC875 ICX055AK-2
(A-4)
IC875
CCD IMAGER
LN8879
CL894
R882 220k
R887 3900
R881 680
R879 33k
C882 47 4V :AL
C877 3.3 35V :AL
C884 0.1 F
C876 1 50V :AL
CL891
D878 MA110-TX (A-4)
D876 MA110-TX (B-4)
D875 MA143-TX (A-4)
Q875 2SB2216
R884 270k
(A-4) (A-3)
Q875, 876
V SUB REG
Q876 XP4501
C879 0.47 F:5216
D877 MA141WA (A-3)
R880 68k
R883 15k
R885 10k
R877 100k
R878 1M
H2
H1
LH1
PG
VL
SUB
OGND
VDD
V4
V3
V2
V1
AGND
VGG
VSS
CCD OUT

data by the CCD
not.
ddresses 1D to 2C
C-147 board), and
on the shield case

the CCD imager
placing the CCD
, remove the CCD
esses 1D to 2C of
camera adjustment

- The CCD imager is not mounted for the already mounted CD-116 board supplied as the repair parts.
  When replacing the CD-116 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

CD-116 BOARD



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- ○ or ● : Through hole.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W or less unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in µF unless otherwise noted. pF: µµF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊟ : nonflammable resistor.
- ⊟ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- ━━ : B+ Line.
- - - - : B– Line.
- ⇒ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

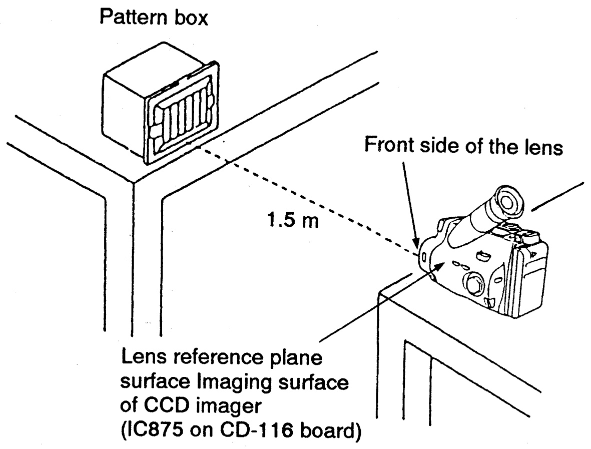
When indicating parts by refer- ence number, please include the board name.

- **Measuring conditions voltage value and waveform.**

(CAMERA REC mode)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Front side of the lens
1.5 m
Lens reference plane
surface Imaging surface
of CCD imager
(IC875 on CD-116 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

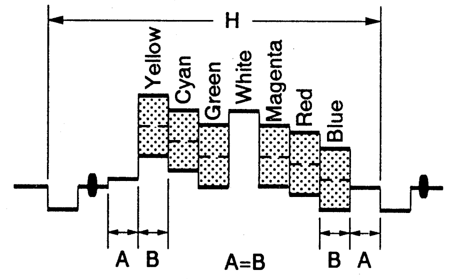

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

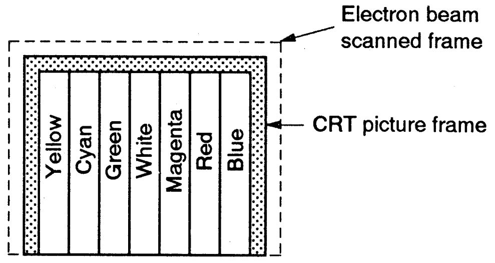

Electron beam
scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

(REC/PB mode)

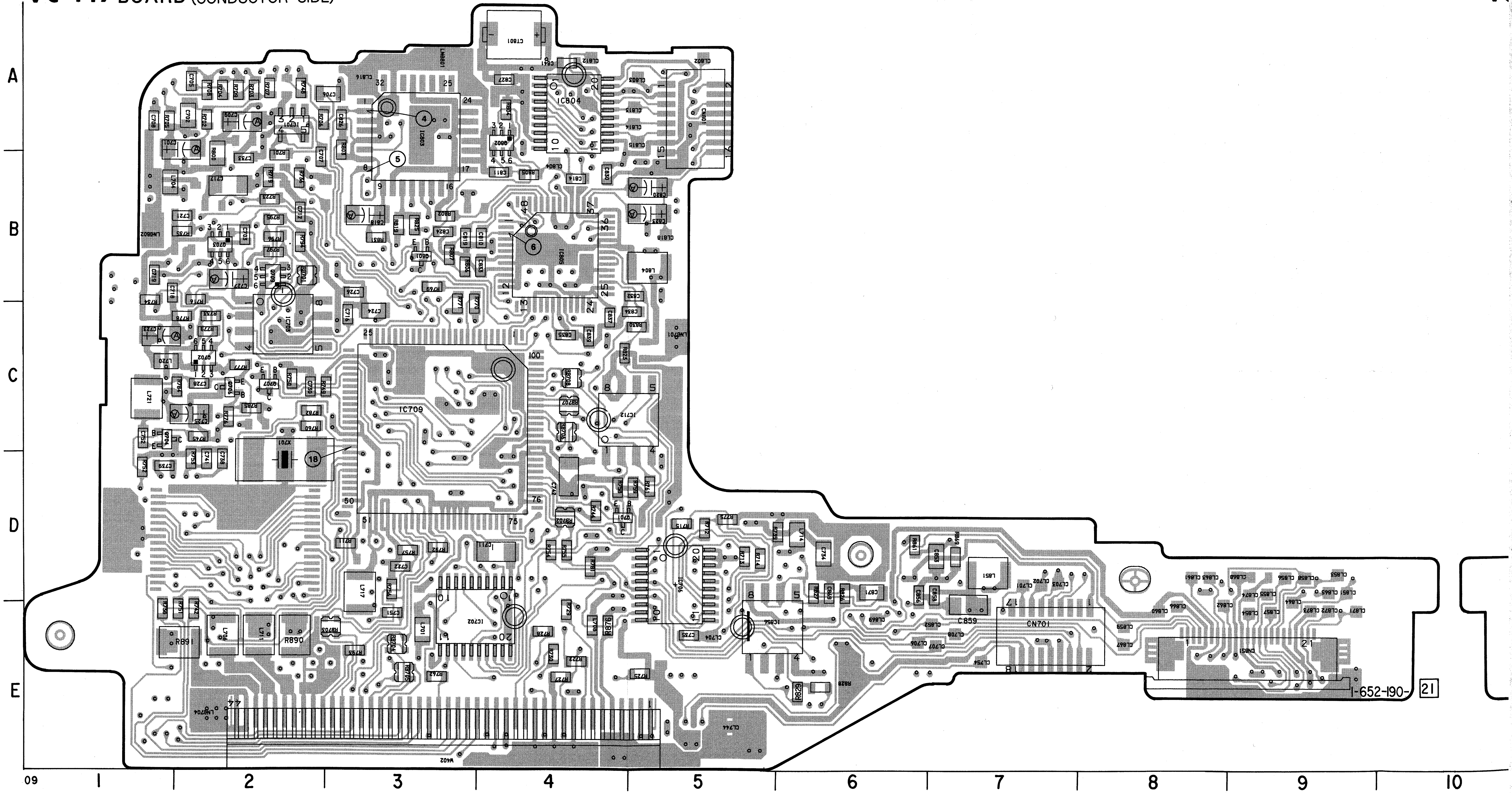
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note: Refer to "9-1-3. How to set the REC Mode" in VIDEO SECTION ADJUSTMENT. (See Page 205)

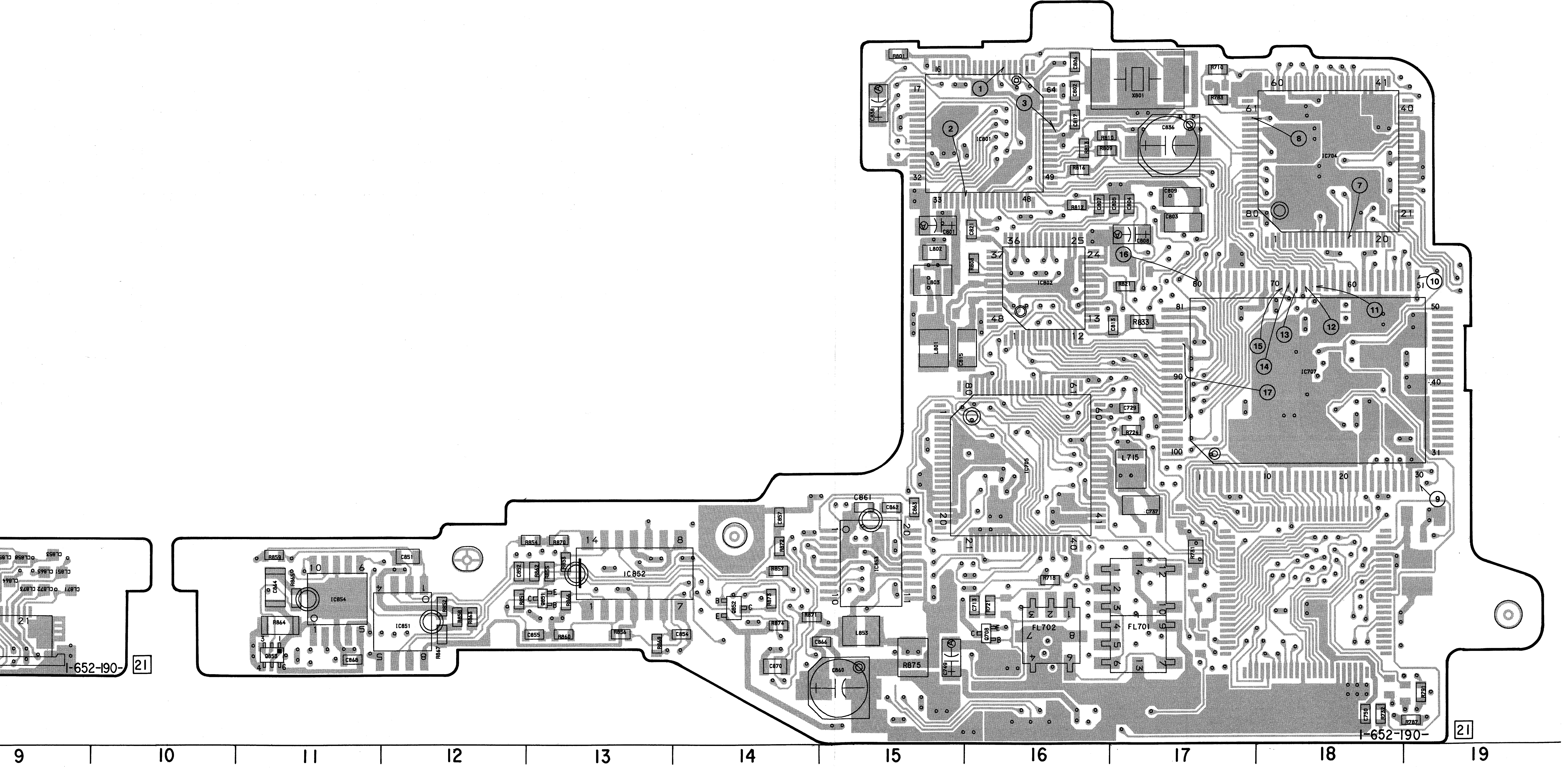
VC-147 (CAMERA, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-147 BOARD: 3000 series —

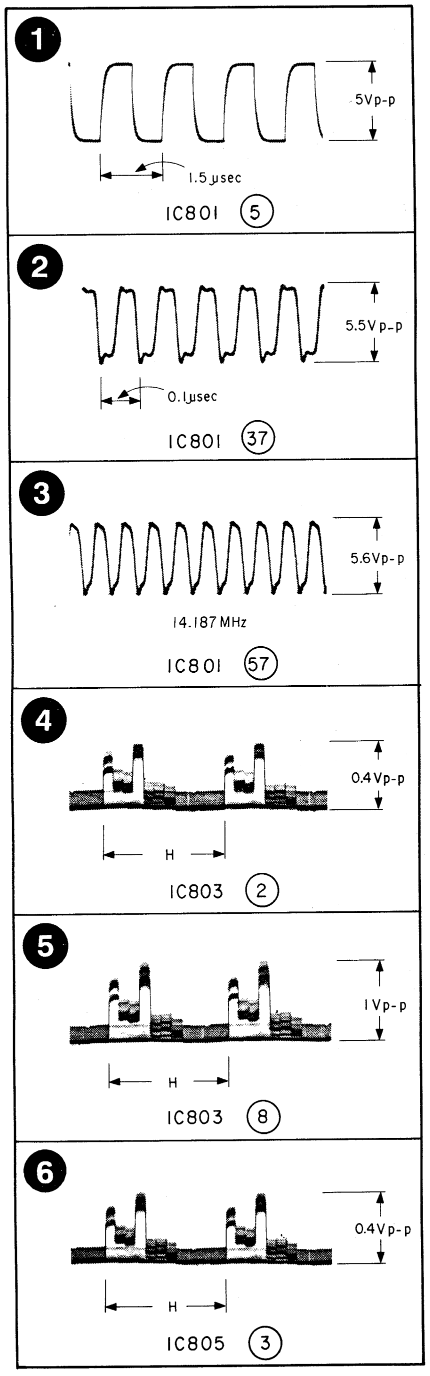
VC-147 BOARD (CONDUCTOR SIDE)

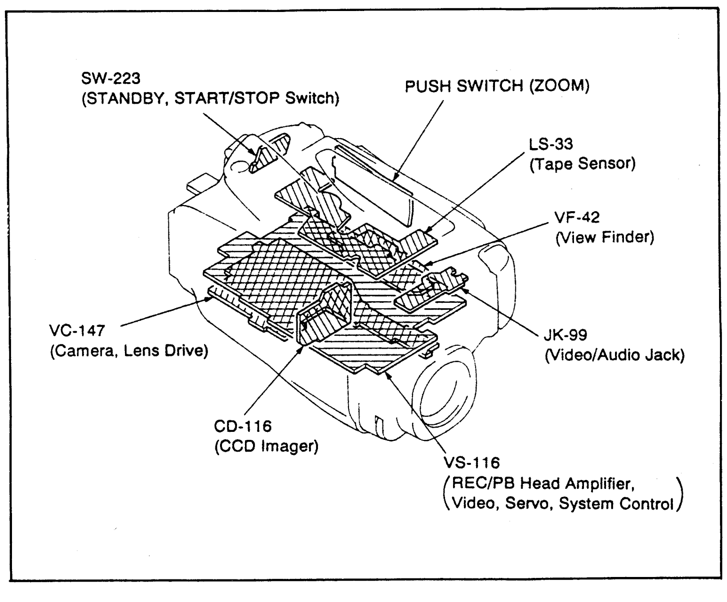

A
B
C
D
E
09
1
2
3
4
5
6
7
8
9
10
IC709
IC702
IC706
IC712
IC805
IC804
IC803
CN701
CN801
CN851
CT801
X701
L721
L717
L851
R891
R890
R876
R829
C859
W402
④
⑤
⑥
⑱
1-652-190-21

VC-147 BOARD (COMPONENT SIDE)

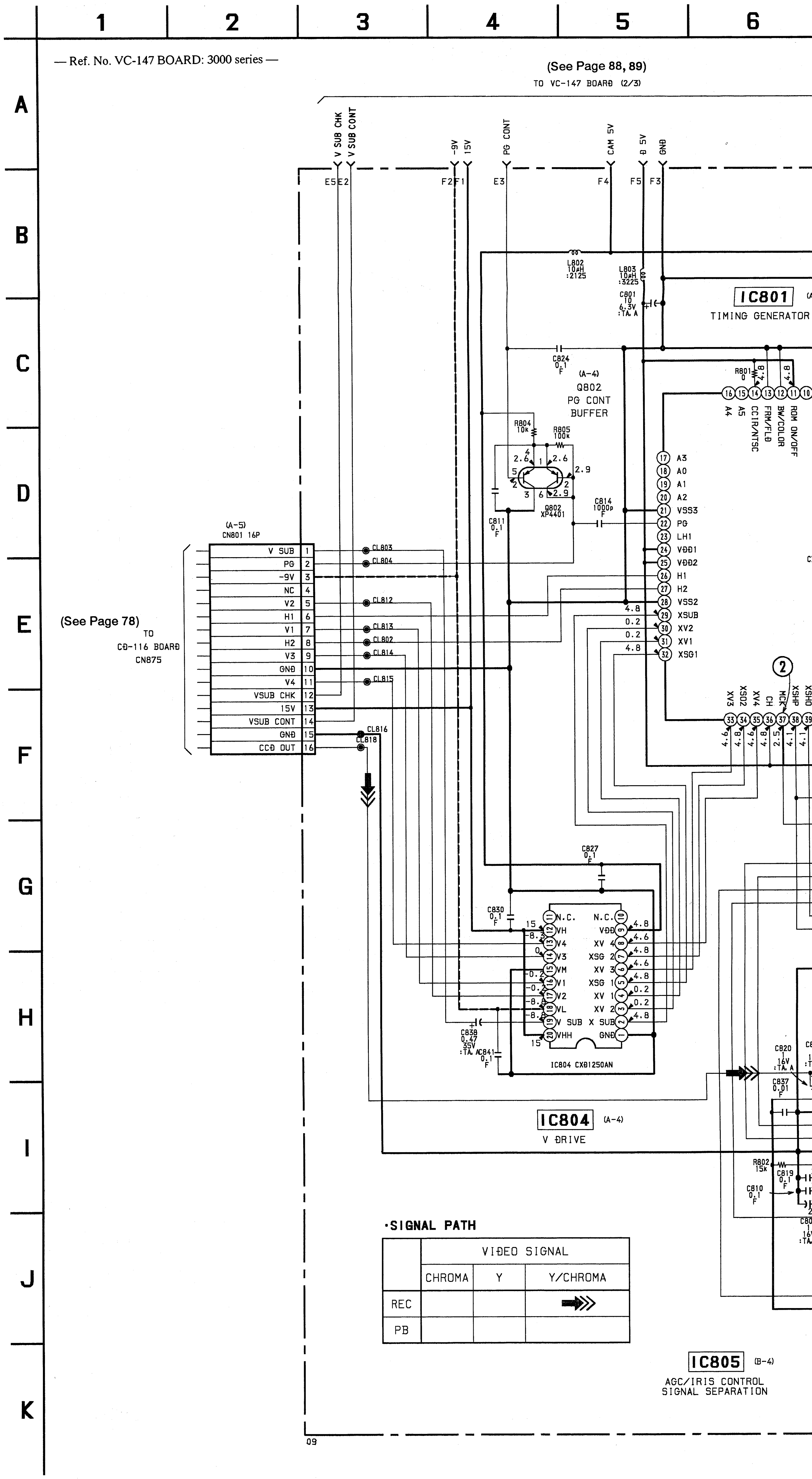

IC801
IC802
IC704
IC707
IC705
IC852
IC853
IC854
IC851
X801
C836
C809
C803
C808
C801
C821
C802
C806
C817
C804
C805
C807
R801
R810
R809
R813
R816
R812
R806
R821
R833
C813
L801
L802
L803
C815
R710
R783
C729
R724
L715
C737
R731
R718
C713
R721
Q708
C749
FL702
FL701
C861
C862
C863
C857
R872
R857
R873
R874
R871
Q852
C866
L853
R875
C860
C870
C864
C850
R854
R870
R853
C852
R842
R855
R851
Q851
R866
C855
R860
R856
R848
C854
R859
C851
C844
R865
R864
Q853
C868
R852
R858
R863
R867
C750
R732
R787
R791
CL853
CL850
CL851
CL865
CL871
CL872
CL873
1-652-190-
21
9
10
11
12
13
14
15
16
17
18
19

VC-147 BOARD (1/3)




SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier, Video, Servo, System Control)

VC-147 (CAMERA) SCHEMATIC DIAGRAM


1
2
3
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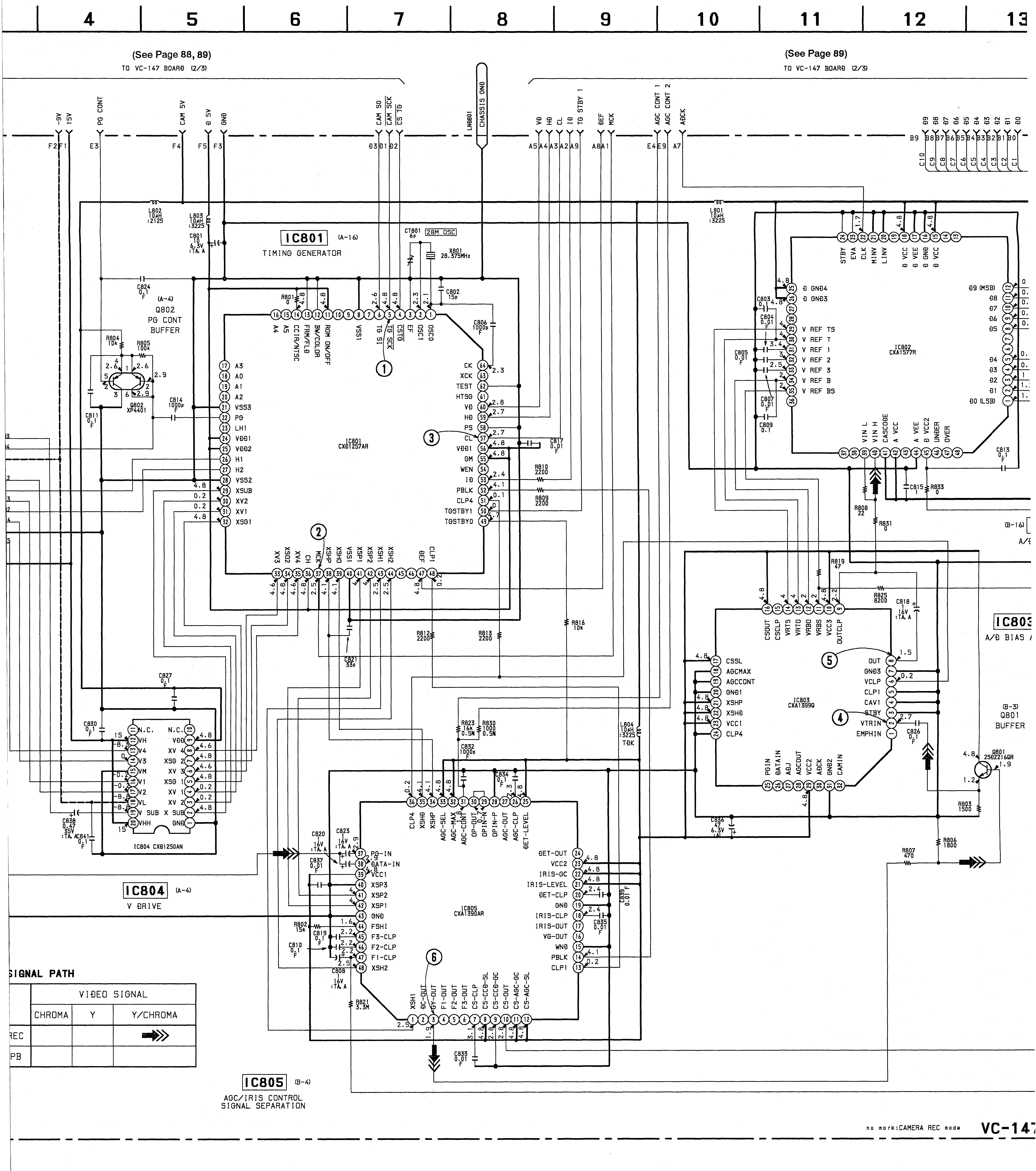
5
6
A
B
C
D
E
F
G
H
I
J
K
— Ref. No. VC-147 BOARD: 3000 series —
(See Page 88, 89)
TO VC-147 BOARD (2/3)
V SUB CHK
V SUB CONT
-9V
15V
PG CONT
CAM 5V
D 5V
GND
E5
E2
F2
F1
E3
F4
F5
F3
L802 10μH :2125
L803 10μH :3225
C801 10 6.3V :TA A
IC801
TIMING GENERATOR
C824 0.1 F
(A-4)
Q802
PG CONT
BUFFER
R804 10k
R805 100k
Q802 XP4401
C814 1000p F
C811 0.1 F
R801 0
A4
A5
CCIR/NTSC
FRM/FLD
BW/COLOR
ROM ON/OFF
A3
A0
A1
A2
VSS3
PG
LH1
VDD1
VDD2
H1
H2
VSS2
XSUB
XV2
XV1
XSG1
XV3
XSG2
XV4
CH
MCK
XSHP
XSHD
(A-5)
CN801 16P
V SUB
PG
-9V
NC
V2
H1
V1
H2
V3
GND
V4
VSUB CHK
15V
VSUB CONT
GND
CCD OUT
CL803
CL804
CL812
CL813
CL802
CL814
CL815
CL816
CL818
(See Page 78)
TO
CD-116 BOARD
CN875
C827 0.1 F
C830 0.1 F
N.C.
VH
V4
V3
VM
V1
V2
VL
V SUB
VHH
VDD
XV 4
XSG 2
XV 3
XSG 1
XV 1
XV 2
X SUB
GND
C838 0.47 35V :TA A
C841 0.1 F
IC804 CXD1250AN
IC804
(A-4)
V DRIVE
C820 16V :TA A
C837 0.01 F
R802 15k
C819 0.1 F
C810 0.1 F
IC805
(B-4)
AGC/IRIS CONTROL
SIGNAL SEPARATION
09

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡≫
PB			



4
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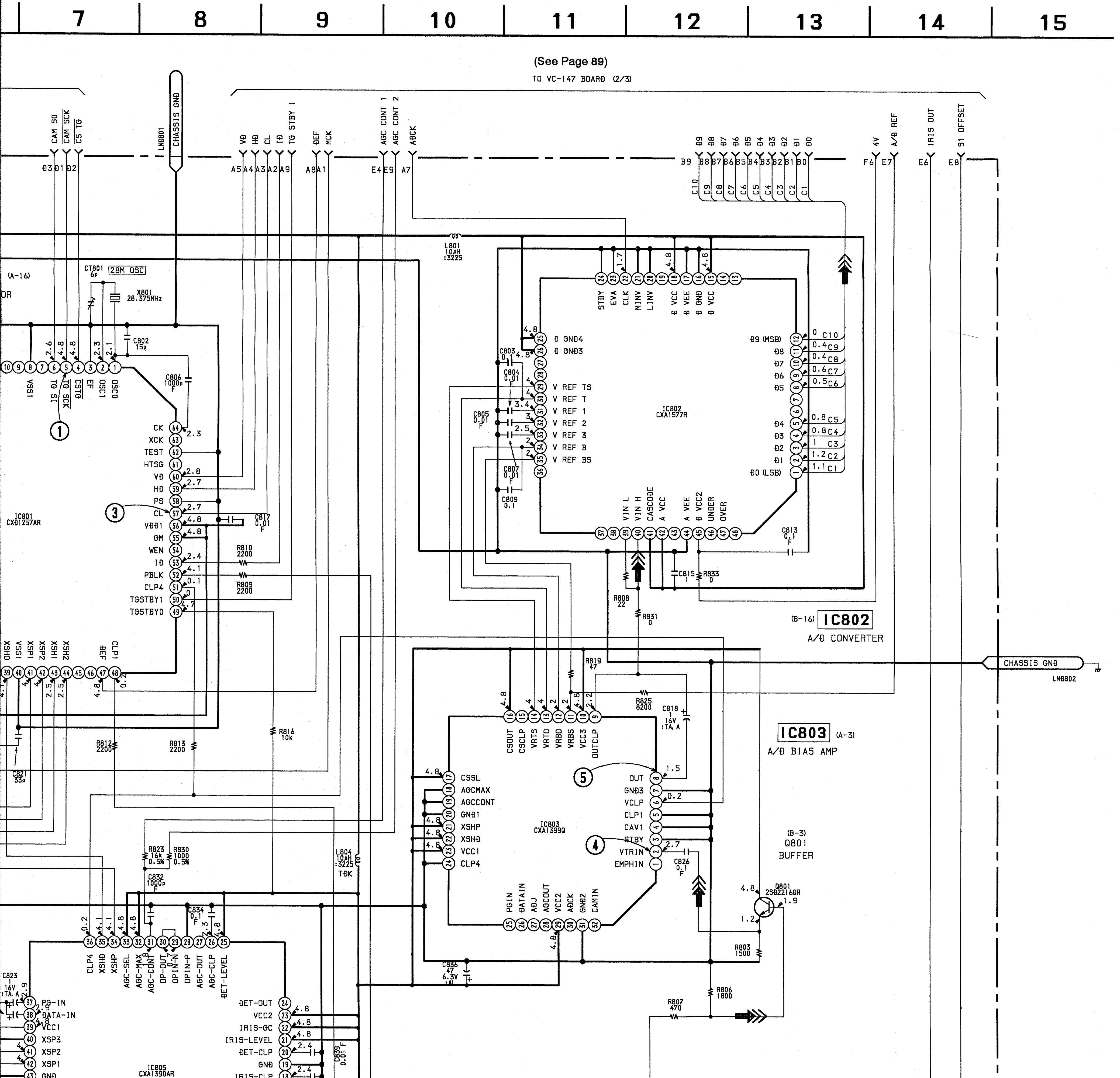
12
13
(See Page 88, 89)
TO VC-147 BOARD (2/3)
(See Page 89)
TO VC-147 BOARD (2/3)
CHASSIS GND
IC801 (A-16)
TIMING GENERATOR
IC801 CXD1257AR
28M OSC
X801 28.375MHz
Q802 PG CONT BUFFER
Q802 XP4401
IC802 CXA1577R
IC803 CXA1399Q
IC803 A/D BIAS
IC804 CXD1250AN
IC804 (A-4)
V DRIVE
IC805 CXA1390AR
IC805 (B-4)
AGC/IRIS CONTROL
SIGNAL SEPARATION
Q801 BUFFER
Q801 2SC2216QR
①
②
③
④
⑤
⑥
no mark:CAMERA REC mode
VC-147

IGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			⟹
PB			

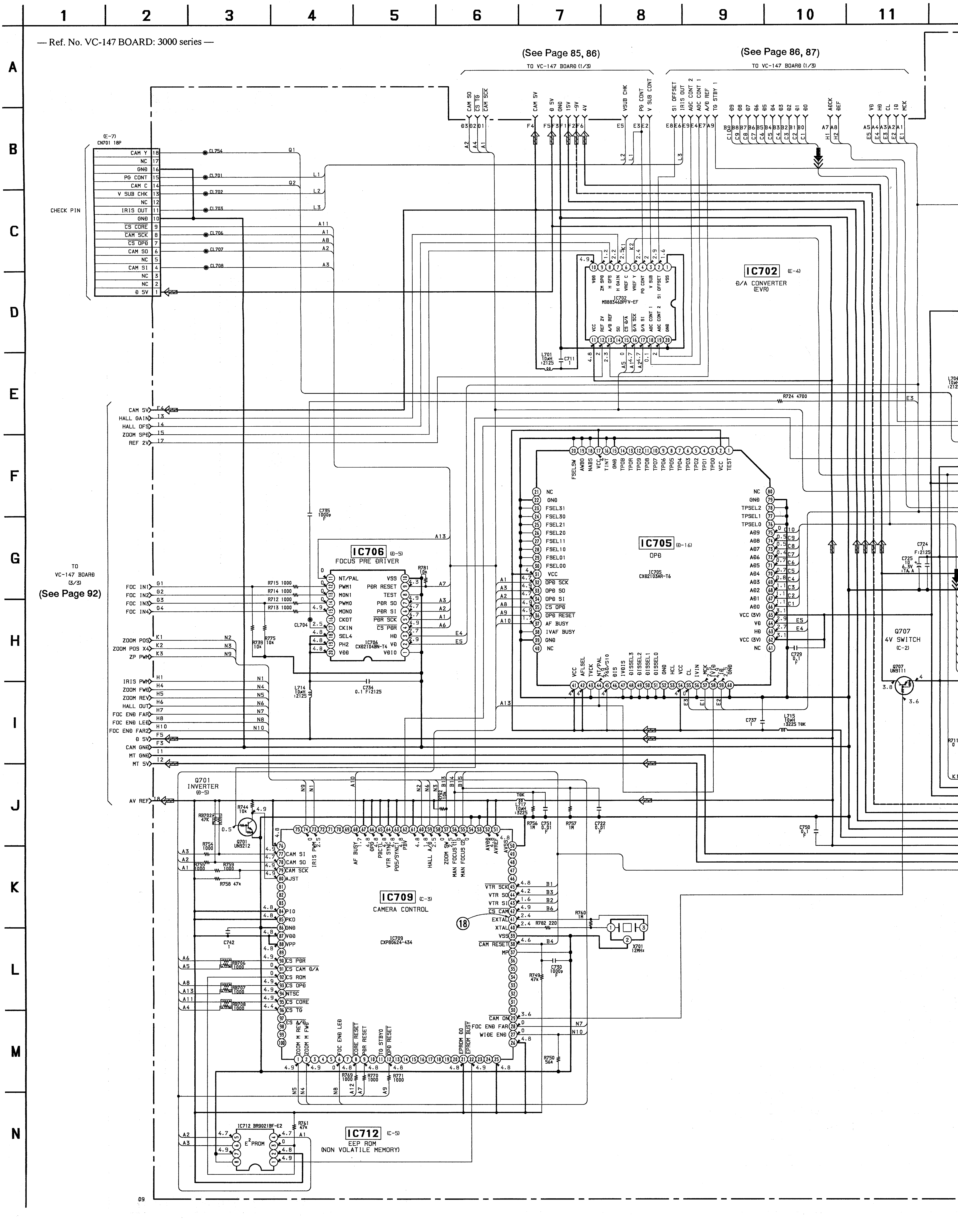

7
8
9
10
11
12
13
14
15
(See Page 89)
TO VC-147 BOARD (2/3)
CAM SO
CAM SCK
CS TG
CHASSIS GND
LND801
VD
HD
CL
ID
TG STBY 1
DEF
MCK
AGC CONT 1
AGC CONT 2
ADCK
D9 D8 D7 D6 D5 D4 D3 D2 D1 D0
4V
A/D REF
IRIS OUT
S1 OFFSET
L801 10μH
CT801 6p
28M OSC
X801 28.375MHz
IC801 CXD1257AR
CK
XCK
TEST
HTSG
VD
HD
PS
CL
VDD1
GM
WEN
ID
PBLK
CLP4
TGSTBY1
TGSTBY0
IC802 CXA1577R
STBY
EVA
CLK
MINV
LINV
D VCC
D VEE
D GND
D GND4
D GND3
V REF TS
V REF T
V REF 1
V REF 2
V REF 3
V REF B
V REF BS
D9 (MSB)
D0 (LSB)
VIN L
VIN H
CASCODE
A VCC
A VEE
D VCC2
UNDER
OVER
IC802
A/D CONVERTER
IC803 CXA1399Q
IC803
A/D BIAS AMP
CSSL
AGCMAX
AGCCONT
GND1
XSHP
XSHD
VCC1
CLP4
CSOUT
CSCLP
VRTO
VRBO
VRBS
VCC3
OUTCLP
OUT
GND3
VCLP
CLP1
CAV1
STBY
VTRIN
EMPHIN
PGIN
DATAIN
ADJ
AGCOUT
VCC2
ADCK
GND2
CAMIN
Q801 2SD2216QR
Q801
BUFFER
CHASSIS GND
LND802
IC805 CXA1390AR
CLP4
XSHD
XSHP
AGC-SEL
AGC-MAX
AGC-CONT
OP-OUT
OPIN-N
OPIN-P
AGC-OUT
AGC-CLP
DET-LEVEL
PG-IN
DATA-IN
VCC1
XSP3
XSP2
XSP1
GND
FSHI
F3-CLP
F2-CLP
F1-CLP
XSH2
DET-OUT
VCC2
IRIS-GC
IRIS-LEVEL
DET-CLP
GND
IRIS-CLP
IRIS-OUT
VG-OUT
WND
PBLK
CLP1
XSH1
DC-OUT
GY-OUT
F1-OUT
F2-OUT
F3-OUT
CS-CLP
CS-CCD-SL
CS-CCD-GC
CS-OUT
CS-AGC-GC
CS-AGC-SL
L804 10μH
R803 1500
R806 1800
R807 470
R808 22
R810 2200
R809 2200
R812 2200
R813 2200
R816 10k
R819 47
R821 3.3M
R823 16k
R825 8200
R830 1000
R831 0
R833 0
①
③
④
⑤
⑥

no mark:CAMERA REC mode

VC-147 BOARD (1/3)

VC-147 (CAMERA) SCHEMATIC DIAGRAM

• Refer to page 81 for Printed Wiring Board.



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11
A
B
C
D
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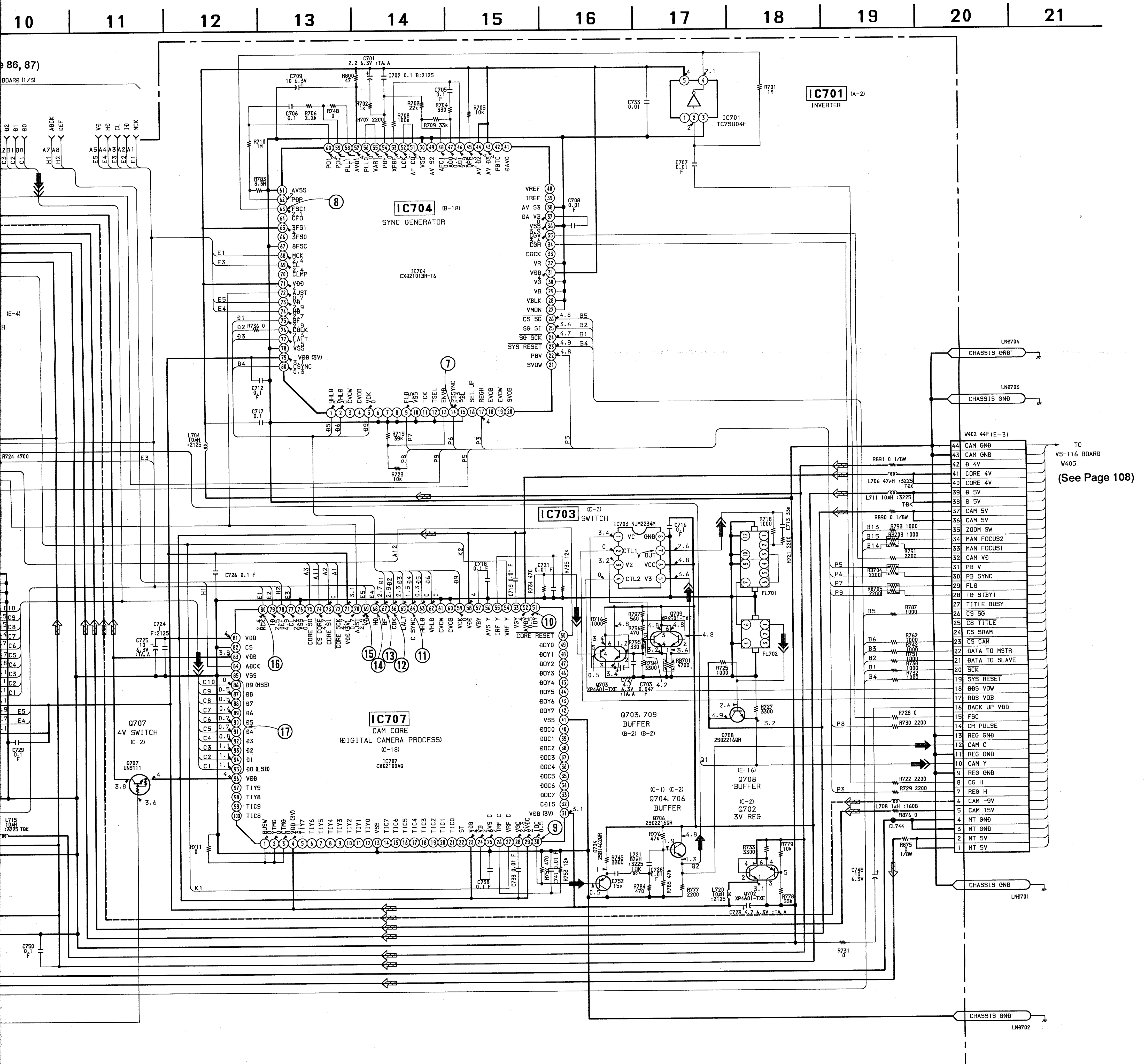
F
G
H
I
J
K
L
M
N
— Ref. No. VC-147 BOARD: 3000 series —
(See Page 85, 86)
TO VC-147 BOARD (1/3)
(See Page 86, 87)
TO VC-147 BOARD (1/3)
CN701 18P
CHECK PIN
IC702
D/A CONVERTER (EVR)
IC702 MB88346BPFV-EF
IC705
OPD
IC705 CXD2103AR-T6
IC706
FOCUS PRE DRIVER
IC706 CXD2104BN-T4
TO VC-147 BOARD (3/3)
(See Page 92)
Q701 INVERTER
Q701 UN5212
IC709
CAMERA CONTROL
IC709 CXP80624-434
X701 12MHz
IC712 BR9021BF-E2
E²PROM
IC712
EEP ROM
(NON VOLATILE MEMORY)
Q707 4V SWITCH
Q707 UN5111
18

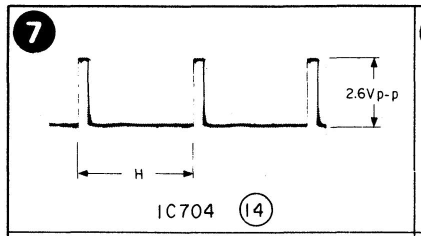

10
11
12
13
14
15
16
17
18
19
20
21
(See Page 86, 87)
BOARD (1/3)
IC701 (A-2)
INVERTER
IC701
TC7SU04F
IC704 (B-1B)
SYNC GENERATOR
IC704
CXD2101BR-T6
IC703 (C-2)
SWITCH
IC703 NJM2234M
IC707
CAM CORE
(DIGITAL CAMERA PROCESS)
(C-1B)
IC707
CXD2100AQ
Q707
4V SWITCH
(C-2)
Q707
UN9111
Q703, 709
BUFFER
(B-2) (B-2)
Q708
BUFFER
(E-1G)
Q708
2SD2216QR
Q704, 706
BUFFER
(C-1) (C-2)
Q702
3V REG
(C-2)
Q709
XP4501-TXE
Q703
XP4601-TXE
Q704
2SB1462QR
Q706
2SD2216QR
Q702
XP4601-TXE
FL701
FL702
LN0704
CHASSIS GND
LN0703
CHASSIS GND
LN0701
CHASSIS GND
LN0702
CHASSIS GND
W402 44P (E-3)
TO
VS-116 BOARD
W405
(See Page 108)
44 CAM GND
43 CAM GND
42 D 4V
41 CORE 4V
40 CORE 4V
39 D 5V
38 D 5V
37 CAM 5V
36 CAM 5V
35 ZOOM SW
34 MAN FOCUS2
33 MAN FOCUS1
32 CAM VD
31 PB V
30 PB SYNC
29 FLD
28 TG STBY1
27 TITLE BUSY
26 CS SG
25 CS TITLE
24 CS SRAM
23 CS CAM
22 DATA TO MSTR
21 DATA TO SLAVE
20 SCK
19 SYS RESET
18 DDS VDW
17 DDS VDB
16 BACK UP VDD
15 FSC
14 CR PULSE
13 REG GND
12 CAM C
11 REG GND
10 CAM Y
9 REG GND
8 CO H
7 REG H
6 CAM -9V
5 CAM 15V
4 MT GND
3 MT GND
2 MT 5V
1 MT 5V

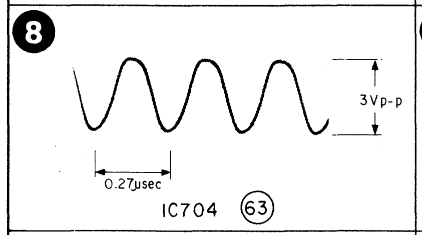
·SIGNAL PATH

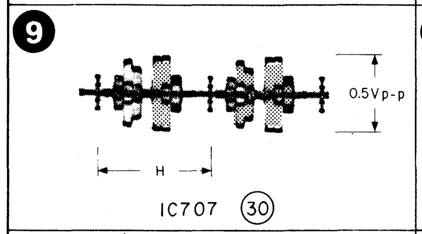
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	⇛
PB			

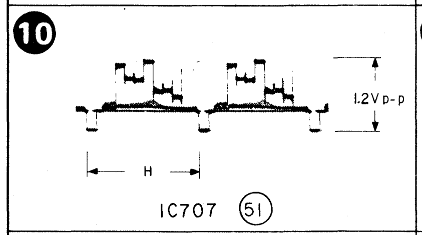
no mark:CAMERA REC mode **VC-147 BOARD (2/3)**

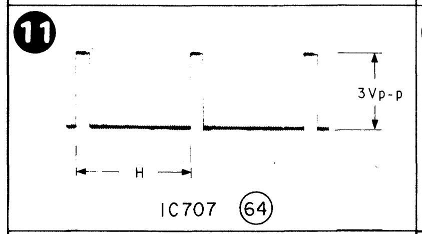
VC-147 BOARD (2/3)

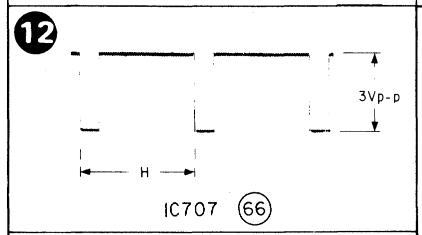


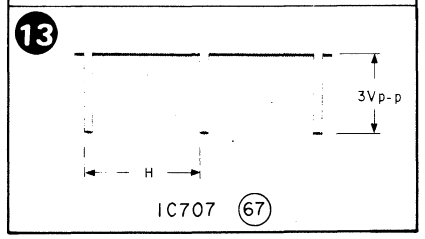


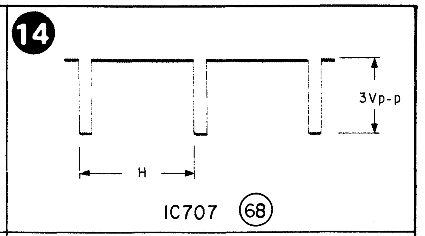


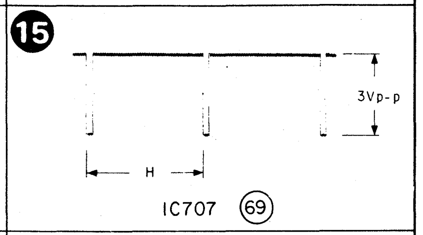


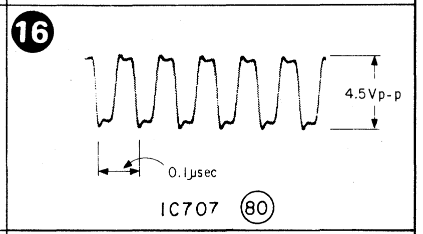


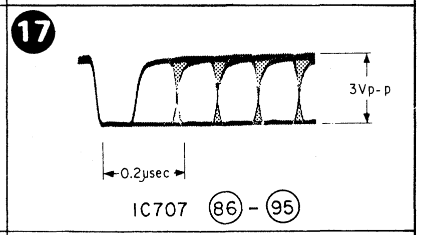


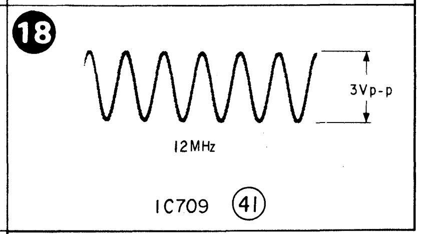






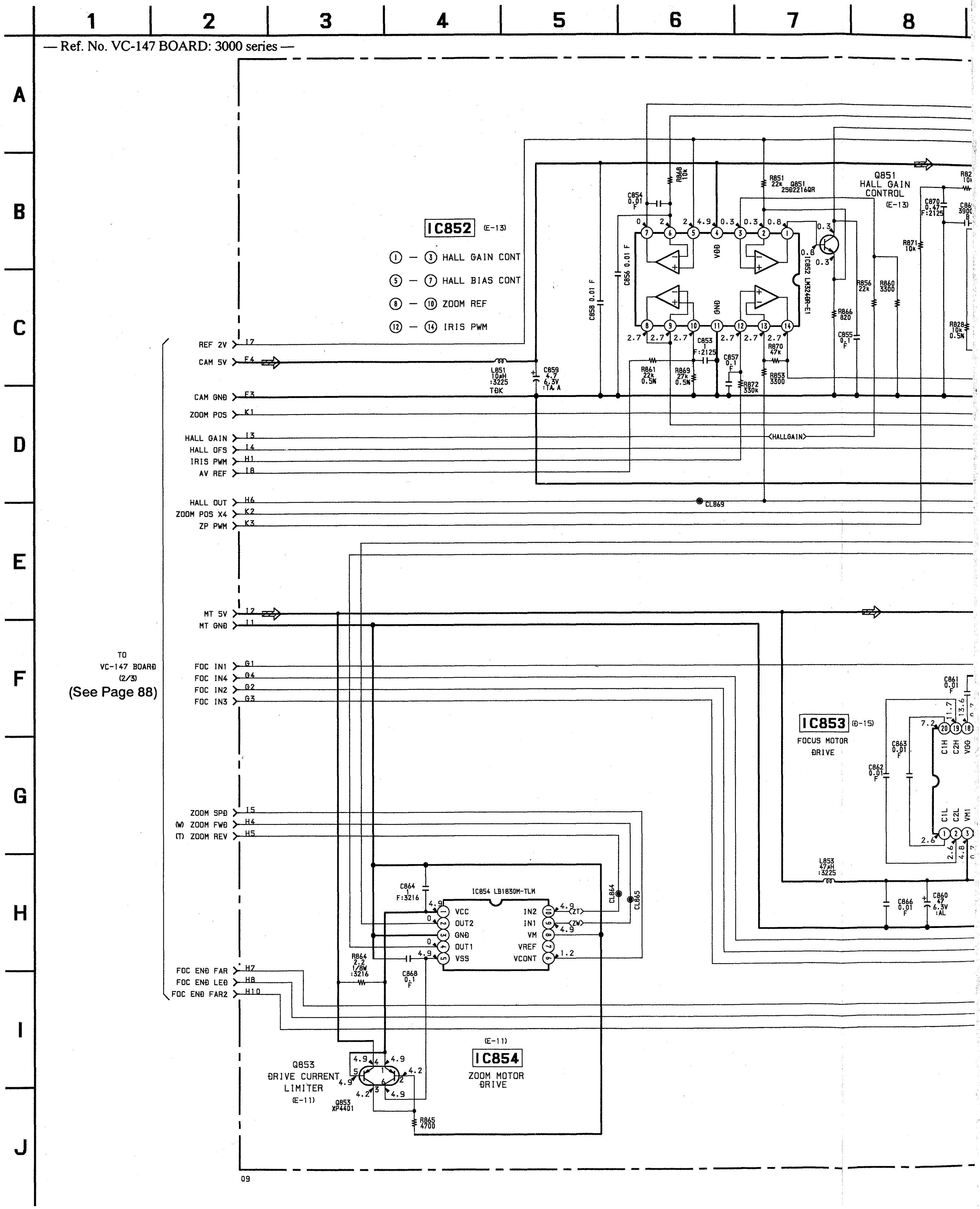






VC-147 (LENS DRIVE) SCHEMATIC DIAGRAM

• Refer to page 81 for Printed Wiring Board.


1
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A
B
C
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E
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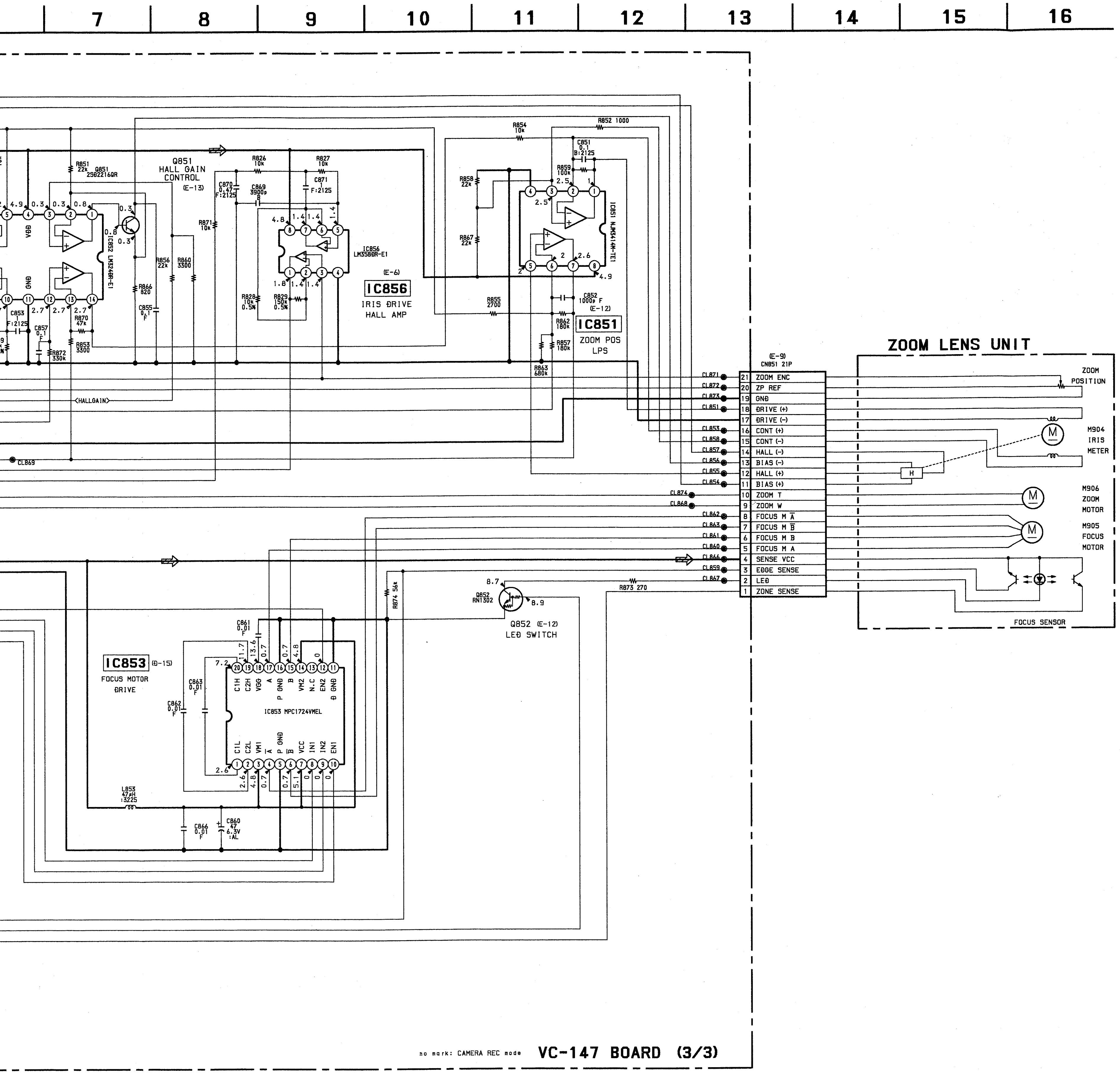
G
H
I
J
— Ref. No. VC-147 BOARD: 3000 series —
IC852 (E-13)
① — ③ HALL GAIN CONT
⑤ — ⑦ HALL BIAS CONT
⑧ — ⑩ ZOOM REF
⑫ — ⑭ IRIS PWM
Q851 HALL GAIN CONTROL (E-13)
REF 2V
CAM 5V
CAM GND
ZOOM POS
HALL GAIN
HALL OFS
IRIS PWM
AV REF
HALL OUT
ZOOM POS X4
ZP PWM
MT 5V
MT GND
TO VC-147 BOARD (2/3)
(See Page 88)
FOC IN1
FOC IN4
FOC IN2
FOC IN3
ZOOM SPD
(W) ZOOM FWD
(T) ZOOM REV
FOC END FAR
FOC END LED
FOC END FAR2
<HALLGAIN>
CL869
IC853 (G-15)
FOCUS MOTOR DRIVE
IC854 LB1830M-TLM
VCC
OUT2
GND
OUT1
VSS
IN2
IN1
VM
VREF
VCONT
Q853 DRIVE CURRENT LIMITER (E-11)
Q853 XP4401
R865 4700
(E-11)
IC854
ZOOM MOTOR DRIVE
09

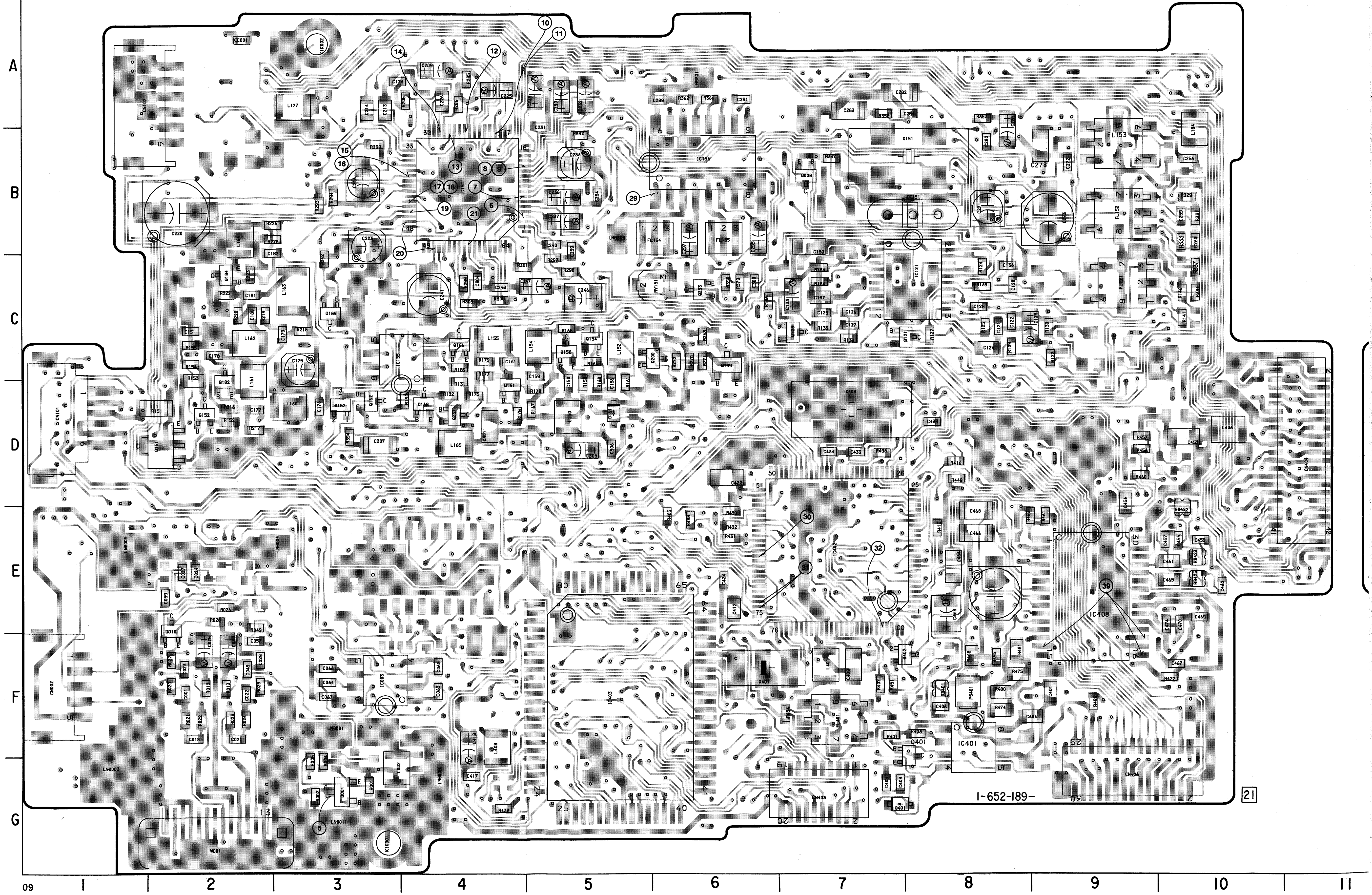
g Board.


7
8
9
10
11
12
13
14
15
16
Q851
HALL GAIN
CONTROL
(E-13)
R851 22k
Q851 2SD2216QR
IC852 LM324BR-E1
VDD
GND
<HALLGAIN>
R856 22k
R860 3300
R866 820
C855 0.1 F
R870 47k
R853 3300
C853 1 F:2125
C857 0.1 F
R872 330k
R871 10k
R826 10k
R827 10k
C870 0.47 F:2125
C869 3900p B
C871 1 F:2125
R828 10k 0.5%
R829 150k 0.5%
IC856 LM358DR-E1
(E-6)
IC856
IRIS DRIVE
HALL AMP
R854 10k
R852 1000
C851 0.1 B:2125
R859 100k
R858 22k
R867 22k
IC851 NJM3414M-TE1
R855 2700
C852 1000p F
(E-12)
R862 180k
R857 180k
R863 680k
IC851
ZOOM POS
LPS
(E-9)
CN851 21P
CL871
CL872
CL873
CL851
CL853
CL858
CL857
CL856
CL855
CL854
CL874
CL868
CL862
CL863
CL861
CL860
CL866
CL859
CL867
CL869
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (−)
16 CONT (+)
15 CONT (−)
14 HALL (−)
13 BIAS (−)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M Ā
7 FOCUS M B̄
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
ZOOM LENS UNIT
ZOOM
POSITION
M904
IRIS
METER
H
M906
ZOOM
MOTOR
M905
FOCUS
MOTOR
FOCUS SENSOR
R874 56k
Q852 RN1302
Q852 (E-12)
LED SWITCH
R873 270
IC853 (D-15)
FOCUS MOTOR
DRIVE
IC853 MPC1724VMEL
C1H
C2H
VGG
A
P GND
B
VM2
N.C
EN2
D GND
C1L
C2L
VM1
Ā
P GND
B̄
VCC
IN1
IN2
EN1
C861 0.01 F
C862 0.01 F
C863 0.01 F
L853 47µH :3225
C866 0.01 F
C860 47 6.3V :AL
no mark: CAMERA REC mode
VC-147 BOARD (3/3)

VS-116 (REC/PB HEAD AMPLIFIER, VIDEO, SERVO, SYSTEM CONTROL) PRINTED WIRING BOARD

— Ref. No. VS-116 BOARD: 4000 series —

VS-116 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
09
1
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9
10
11
IC151
IC154
IC121
IC155
IC003
IC403
IC402
IC408
IC401
X151
X403
X401
CF151
FL153
FL152
FL121
FL154
FL155
FL401
CN101
CN102
CN002
CN404
CN405
CN406
W001
L177
L164
L163
L162
L161
L160
L155
L154
L152
L150
L185
L184
L401
L403
L002
LND001
LND003
LND004
LND005
LND009
LND011
LND301
LND303
C220
C223
C241
C233
C246
C216
C175
C276
C278
C277
C307
Q151
Q152
Q182
Q189
Q010
Q001
Q008
Q199
Q401
KX001
KX002
1-652-189-
21
①
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
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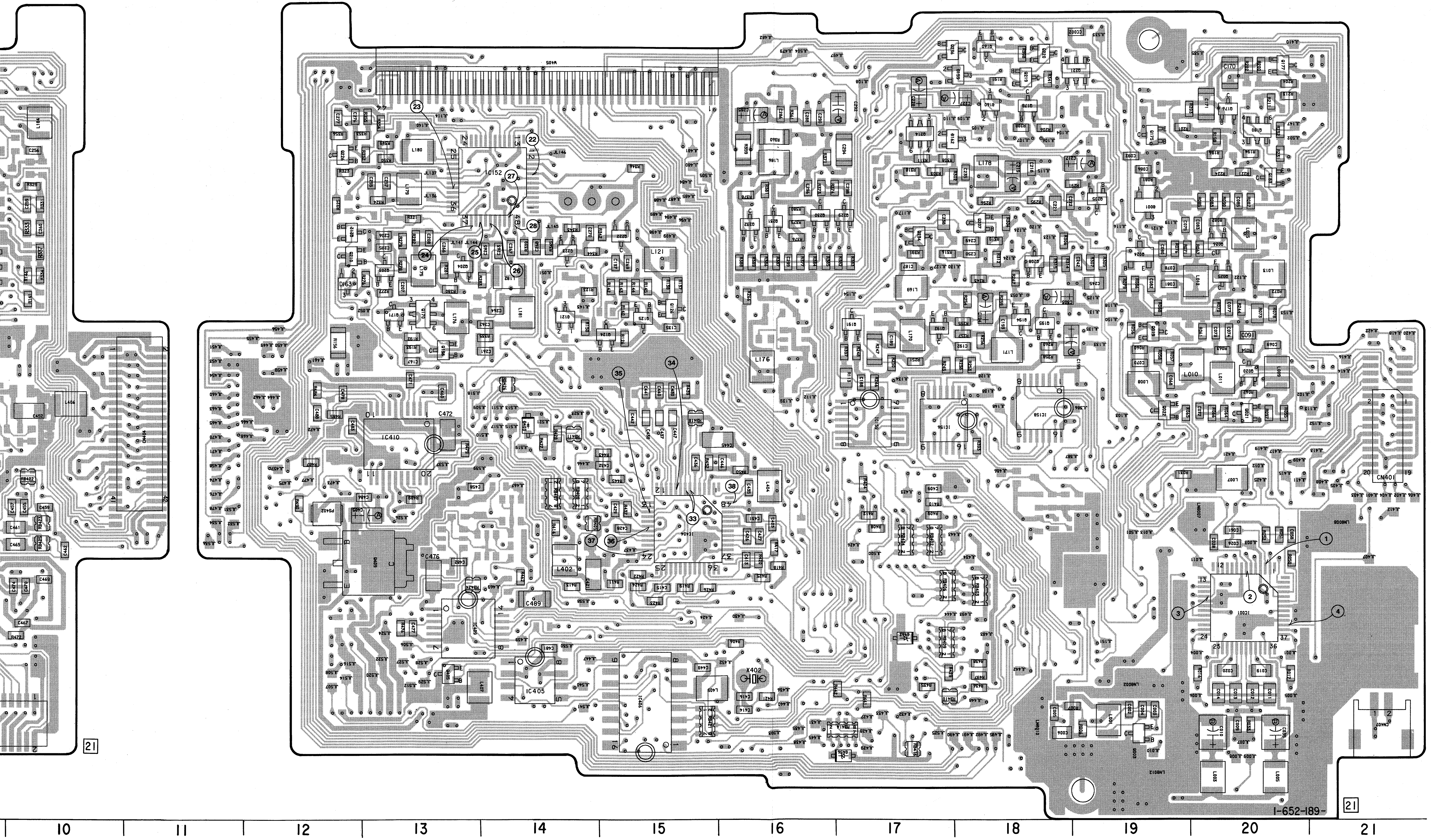
VS-116 BOARD (CONDUCTOR SIDE)


IC152
IC410
IC404
IC405
IC406
IC159
IC156
IC158
IC001
CN401
X402
L176
L402
C489
C472
1-652-189-
21
21
①
②
③
④
㉒
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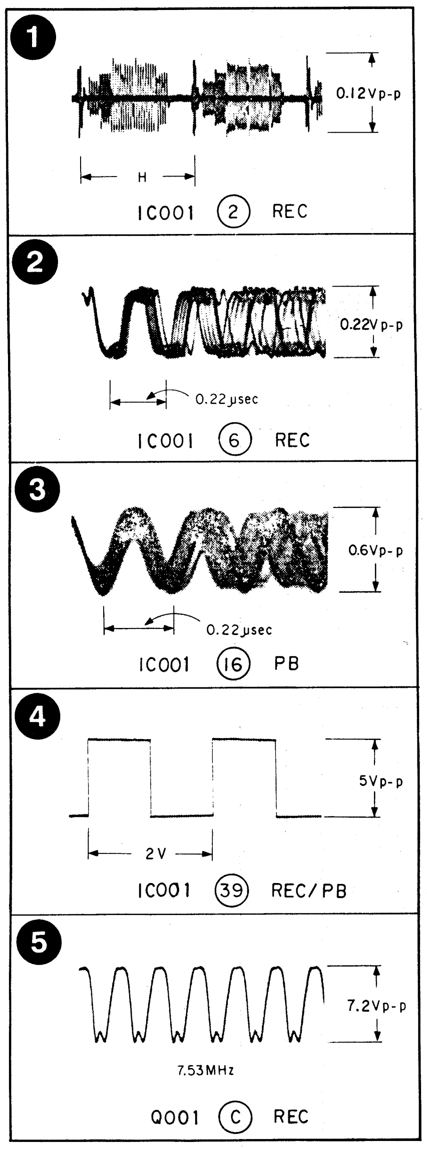
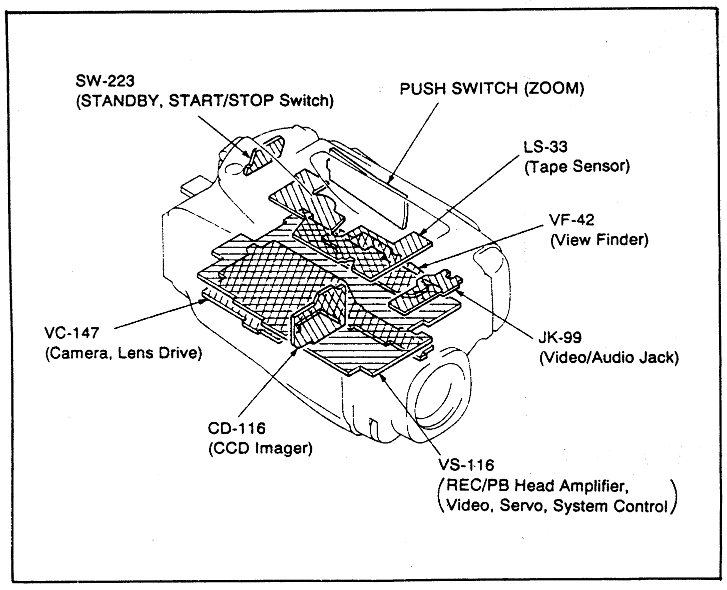
21

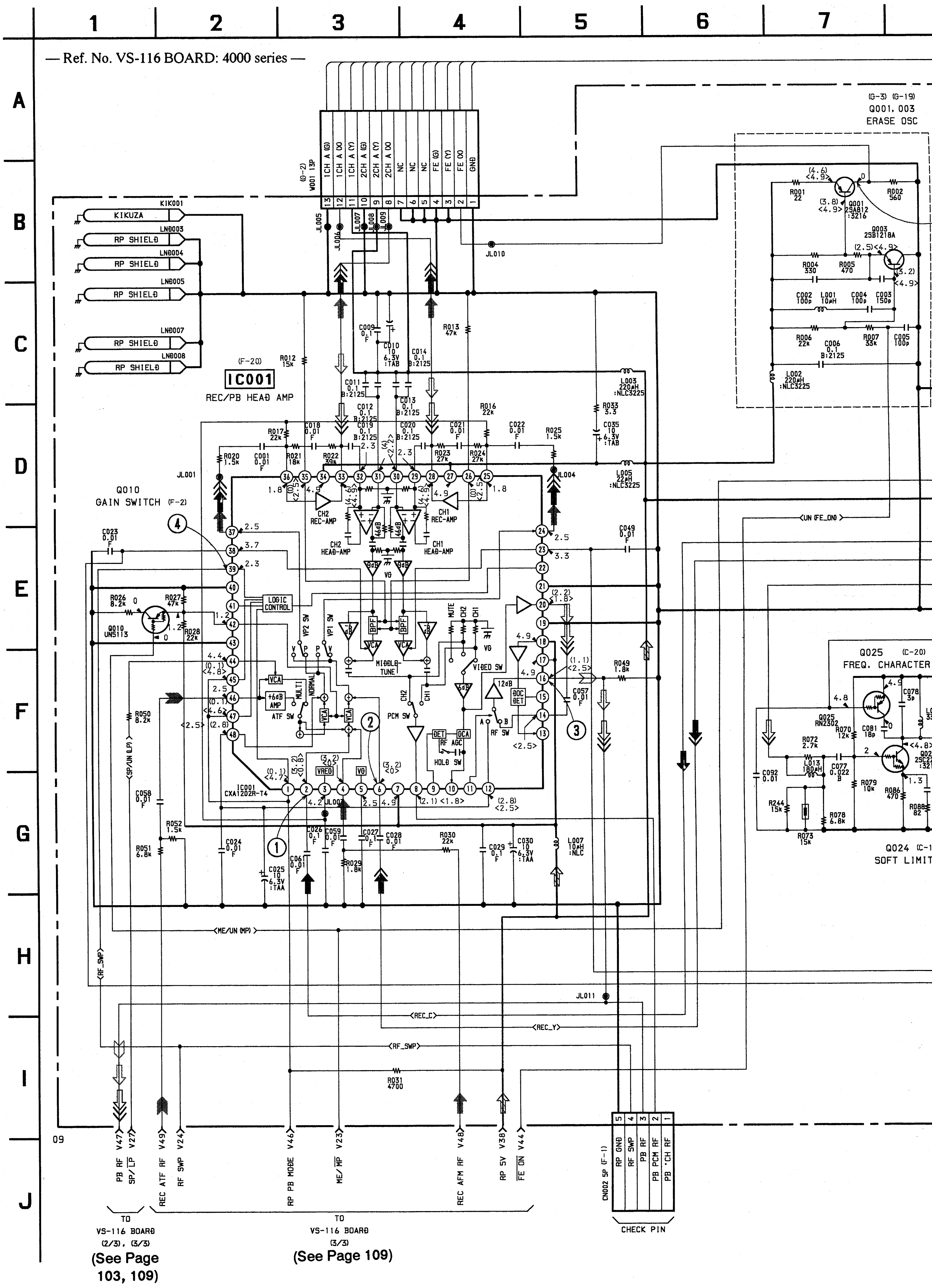
VS-116 BOARD (1/3)

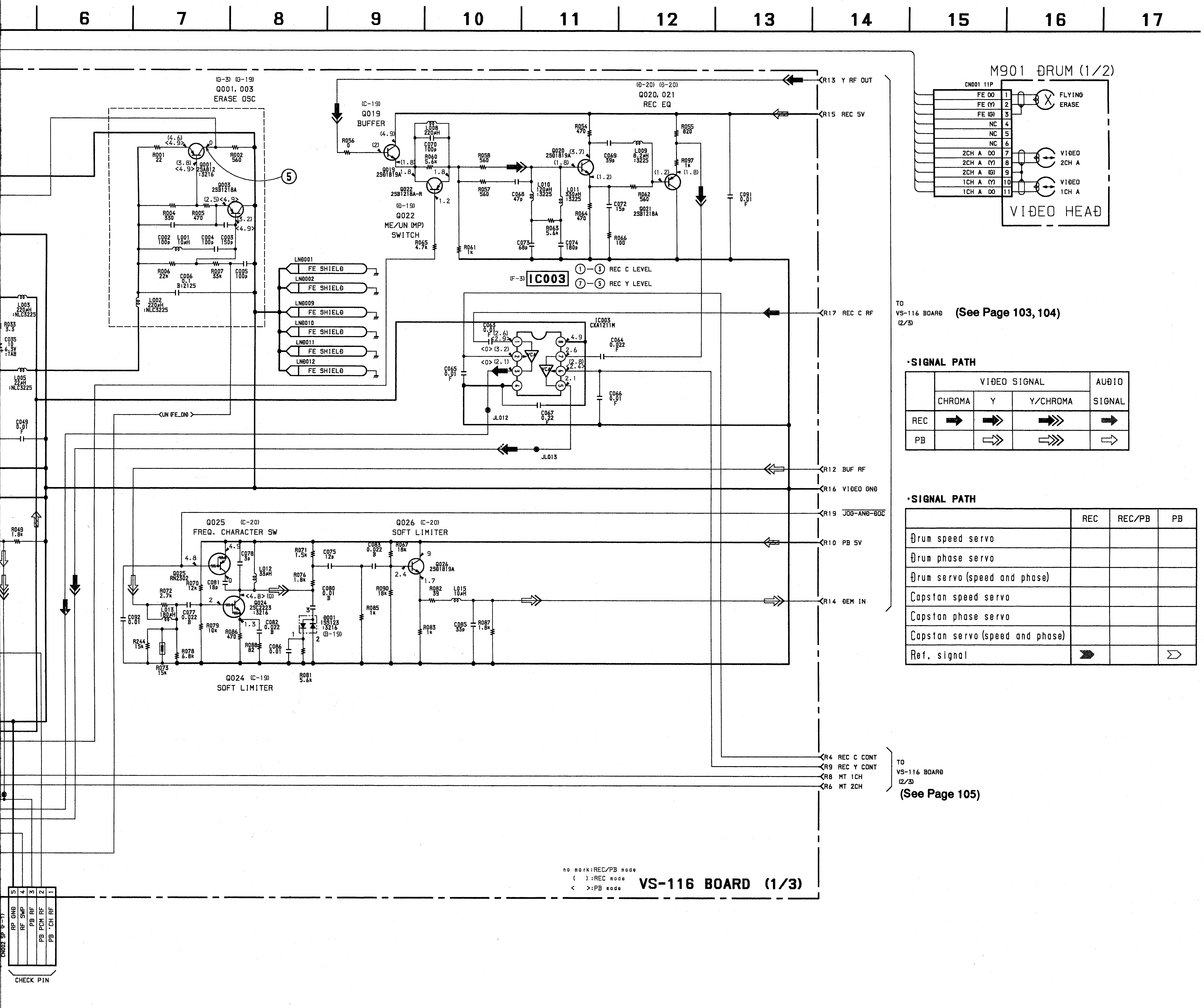



SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier,
Video, Servo, System Control)

VS-116 (REC/PB HEAD AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. VS-116 BOARD: 4000 series —


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
(G-2)
W001 13P
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
NC
NC
NC
FE (G)
FE (Y)
FE (X)
GND
KIKUZA
KIK001
RP SHIELD
LN0003
LN0004
LN0005
LN0007
LN0008
JL005
JL006
JL007
JL008
JL009
JL010
IC001
(F-20)
REC/PB HEAD AMP
IC001
CXA1202R-T4
Q010
GAIN SWITCH (F-2)
Q010
UN5113
JL001
JL004
JL011
LOGIC CONTROL
VP2 SW
VP1 SW
MUTE
CH2
CH1
VG
MIDDLE TUNE
VCA
+64dB AMP
ATF SW
MULTI
NORMAL
VREB
PCM SW
HOLD SW
RF AGC
DET
GCA
RF SW
VIDEO SW
12dB
DOC DET
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
BPF
44dB
(G-3) (G-19)
Q001, 003
ERASE OSC
Q001
2SA812
Q003
2SB1218A
Q025 (C-20)
FREQ. CHARACTER
Q025
RN2302
Q024 (C-1
SOFT LIMIT
L003
220μH
:NLC3225
L005
22μH
:NLC3225
L002
220μH
:NLC3225
L007
10μH
:NLC
<ME/UN (MP)>
<SP/UN (LP)>
<RF_SWP>
<REC_C>
<REC_Y>
<UN (FE_ON)>
PB RF V47
SP/LP V27
REC ATF RF V49
RF SWP V24
RP PB MODE V46
ME/MP V23
REC AFM RF V48
RP 5V V38
FE ON V44
CN002 5P (F-1)
RP GND
RF SWP
PB RF
PB PCM RF
PB *CH RF
CHECK PIN
TO
VS-116 BOARD
(2/3), (3/3)
(See Page
103, 109)
TO
VS-116 BOARD
(3/3)
(See Page 109)
09


6
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11
12
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14
15
16
17
Q001, 003
ERASE OSC
Q019
BUFFER
Q022
ME/UN (MP) SWITCH
Q020, 021
REC EQ
IC003
CXA1211M
①-③ REC C LEVEL
⑦-⑤ REC Y LEVEL
FE SHIELD
Q025
FREQ. CHARACTER SW
Q026
SOFT LIMITER
Q024
SOFT LIMITER
R13 Y RF OUT
R15 REC 5V
R17 REC C RF
R12 BUF RF
R16 VIDEO GND
R19 JOG-AND-DOC
R10 PB 5V
R14 DEM IN
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
M901 DRUM (1/2)
CN001 11P
FE (X)
FE (Y)
FE (G)
NC
2CH A (X)
2CH A (Y)
2CH A (G)
1CH A (Y)
1CH A (X)
FLYING ERASE
VIDEO 2CH A
VIDEO 1CH A
VIDEO HEAD
CN002 5P
RP GND
RF SWP
PB PCM RF
PB CH RF
CHECK PIN
no mark:REC/PB mode
( ):REC mode
< >:PB mode

TO
VS-116 BOARD
(2/3)
(See Page 103, 104)

TO
VS-116 BOARD
(2/3)
(See Page 105)

VS-116 BOARD (1/3)

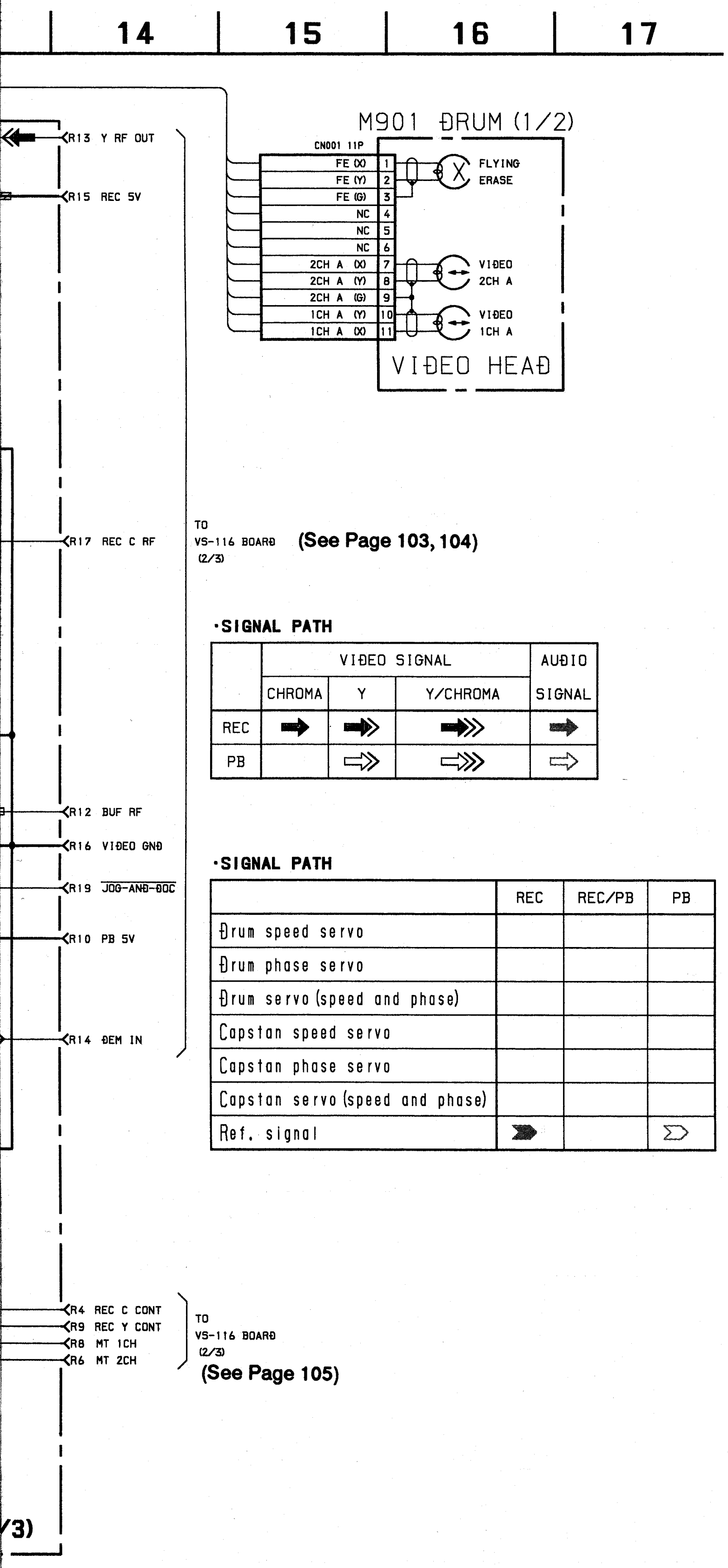
·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB		⇨»	⇨»»	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

CCD-TR350E

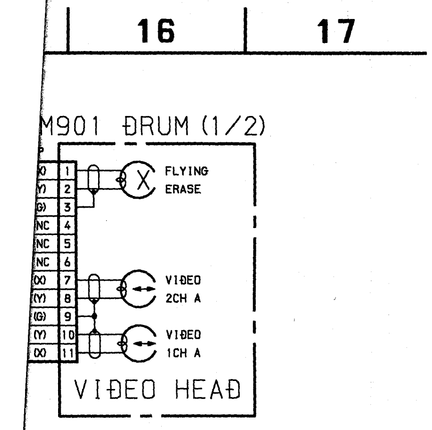

14
15
16
17
R13 Y RF OUT
R15 REC 5V
M901 ĐRUM (1/2)
CN001 11P
FE (X) 1
FE (Y) 2
FE (G) 3
NC 4
NC 5
NC 6
2CH A (X) 7
2CH A (Y) 8
2CH A (G) 9
1CH A (Y) 10
1CH A (X) 11
FLYING ERASE
VIĐEO 2CH A
VIĐEO 1CH A
VIĐEO HEAĐ
R17 REC C RF
TO VS-116 BOARĐ (2/3)
(See Page 103, 104)
R12 BUF RF
R16 VIĐEO GNĐ
R19 JOG-ANĐ-ĐOC
R10 PB 5V
R14 ĐEM IN
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO VS-116 BOARĐ (2/3)
(See Page 105)
/3)

·SIGNAL PATH

	VIĐEO SIGNAL			AUĐIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB		⇨»	⇨»»	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Đrum speed servo			
Đrum phase servo			
Đrum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷


16
17
M901 DRUM (1/2)
X)
Y)
G)
NC
NC
NC
(X)
(Y)
(G)
(Y)
(X)
1
2
3
4
5
6
7
8
9
10
11
FLYING
ERASE
VIDEO
2CH A
VIDEO
1CH A
VIDEO HEAD

Page 103, 104)

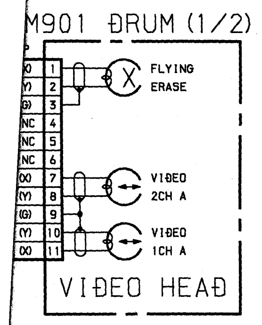
VIDEO SIGNAL		AUDIO SIGNAL
Y	Y/CHROMA	
➡	➡	➡
⇨	⇨	⇨

H

	REC	REC/PB	PB
servo			
servo			
(speed and phase)			
eed servo			
ase servo			
rvo (speed and phase)			
l	➤		▷

105)

| 16 | 17 |


M901 DRUM (1/2)
(X) 1
(Y) 2
(G) 3
NC 4
NC 5
NC 6
(X) 7
(Y) 8
(G) 9
(Y) 10
(X) 11
FLYING ERASE
VIDEO 2CH A
VIDEO 1CH A
VIDEO HEAD

Page 103, 104)

VIDEO SIGNAL		AUDIO SIGNAL
Y	Y/CHROMA	
➡»	➡⋙	➡
⇨»	⇨⋙	⇨

H

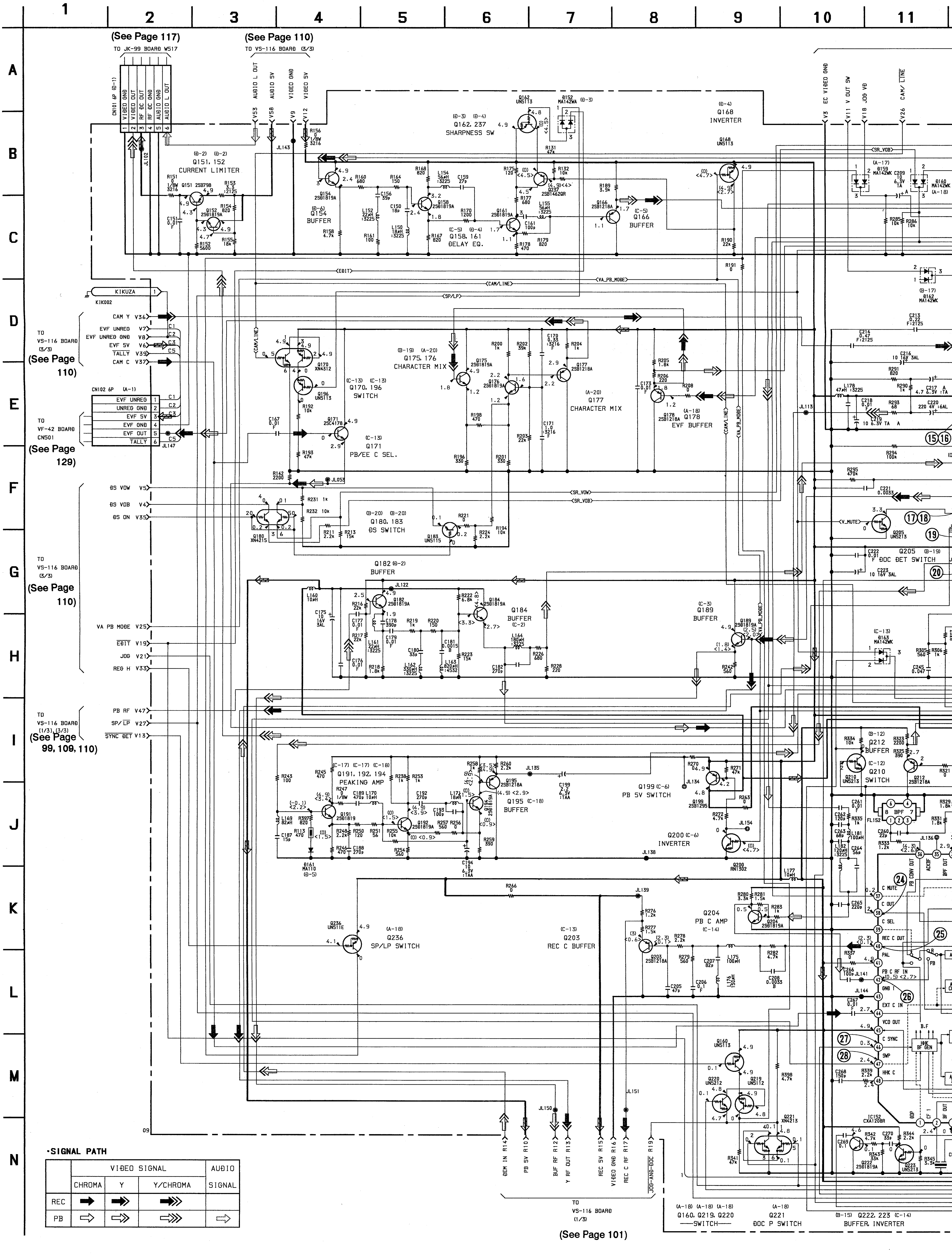
	REC	REC/PB	PB
servo			
servo			
(speed and phase)			
eed servo			
ase servo			
rvo (speed and phase)			
l	▶		▷

105)

VS-116 (VIDEO) SCHEMATIC DIAGRAM

— Ref. No. VS-116 BOARD: 4000 series —

• Refer to page 95 for Printed Wiring Board.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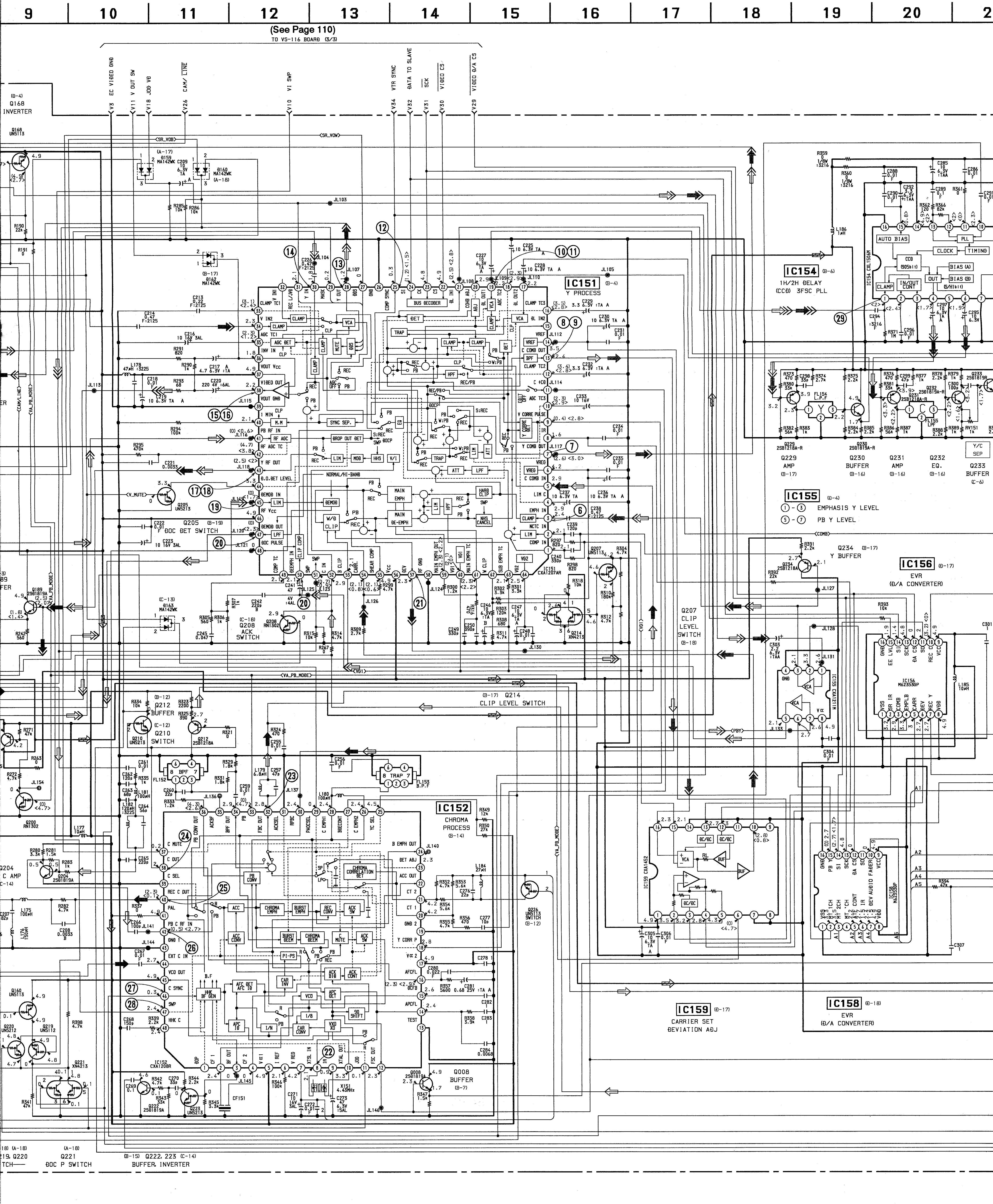
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
(See Page 117)
TO JK-99 BOARD W517
(See Page 110)
TO VS-116 BOARD (3/3)
CN101 6P (D-1)
VIDEO GND
VIDEO OUT
RF DC OUT
RF DC GND
AUDIO GND
AUDIO L OUT
AUDIO L OUT
AUDIO 5V
VIDEO GND
VIDEO 5V
V53
V58
V9
V12
JL102
JL143
Q151, 152
CURRENT LIMITER
Q154
BUFFER
Q158, 161
DELAY EQ.
Q162, 237
SHARPNESS SW
Q162
UN5113
D152
MA142WA
Q168
INVERTER
Q166
BUFFER
EC VIDEO GND
V OUT SW
JOG VD
CAM/LINE
V3
V11
V18
V26
KIKUZA
KIK002
CAM Y V36
EVF UNREG V7
EVF UNREG GND V8
EVF 5V V6
TALLY V39
CAM C V37
TO
VS-116 BOARD
(3/3)
(See Page
110)
CN102 6P (A-1)
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY
TO
VF-42 BOARD
CN501
(See Page
129)
JL147
Q170, 196
SWITCH
Q171
PB/EE C SEL.
Q175, 176
CHARACTER MIX
Q177
CHARACTER MIX
Q178
EVF BUFFER
JL113
<EDIT>
<CAM/LINE>
<SP/LP>
<VA_PB_MODE>
<SR_VOW>
<SR_VOB>
<V_MUTE>
DS VOW V5
DS VOB V4
DS ON V35
Q180, 183
DS SWITCH
JL053
Q205
DOC DET SWITCH
TO
VS-116 BOARD
(3/3)
(See Page
110)
VA PB MODE V25
EDIT V19
JOG V21
REG H V33
Q182
BUFFER
JL122
Q184
BUFFER
Q189
BUFFER
D163
MA142WK
TO
VS-116 BOARD
(1/3), (3/3)
(See Page
99, 109, 110)
PB RF V47
SP/LP V27
SYNC DET V13
Q191, 192, 194
PEAKING AMP
Q195
BUFFER
JL135
Q199
PB 5V SWITCH
JL134
Q200
INVERTER
JL138
JL154
Q212
BUFFER
Q210
SWITCH
FL152
BPF
Q204
PB C AMP
Q203
REC C BUFFER
Q236
SP/LP SWITCH
JL139
JL141
JL144
C MUTE
C OUT
C SEL
REC C OUT
PAL
PB C RF IN
GND 1
EXT C IN
VCO OUT
C SYNC
SWP
HHK C
HHK BF GEN
IC152
CXA1208R
JL150
JL151
DEM IN R14
PB 5V R10
BUF RF R12
Y RF OUT R13
REC 5V R15
VIDEO GND R16
REC C RF R17
JOG-AND-DOC R19
TO
VS-116 BOARD
(1/3)
(See Page 101)
Q160, Q219, Q220
SWITCH
Q221
DOC P SWITCH
Q222, 223
BUFFER, INVERTER
D9
15
16
17
18
19
20
24
25
26
27
28

•SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	
PB	⇨	⇨⇨	⇨⇨⇨	⇨


9
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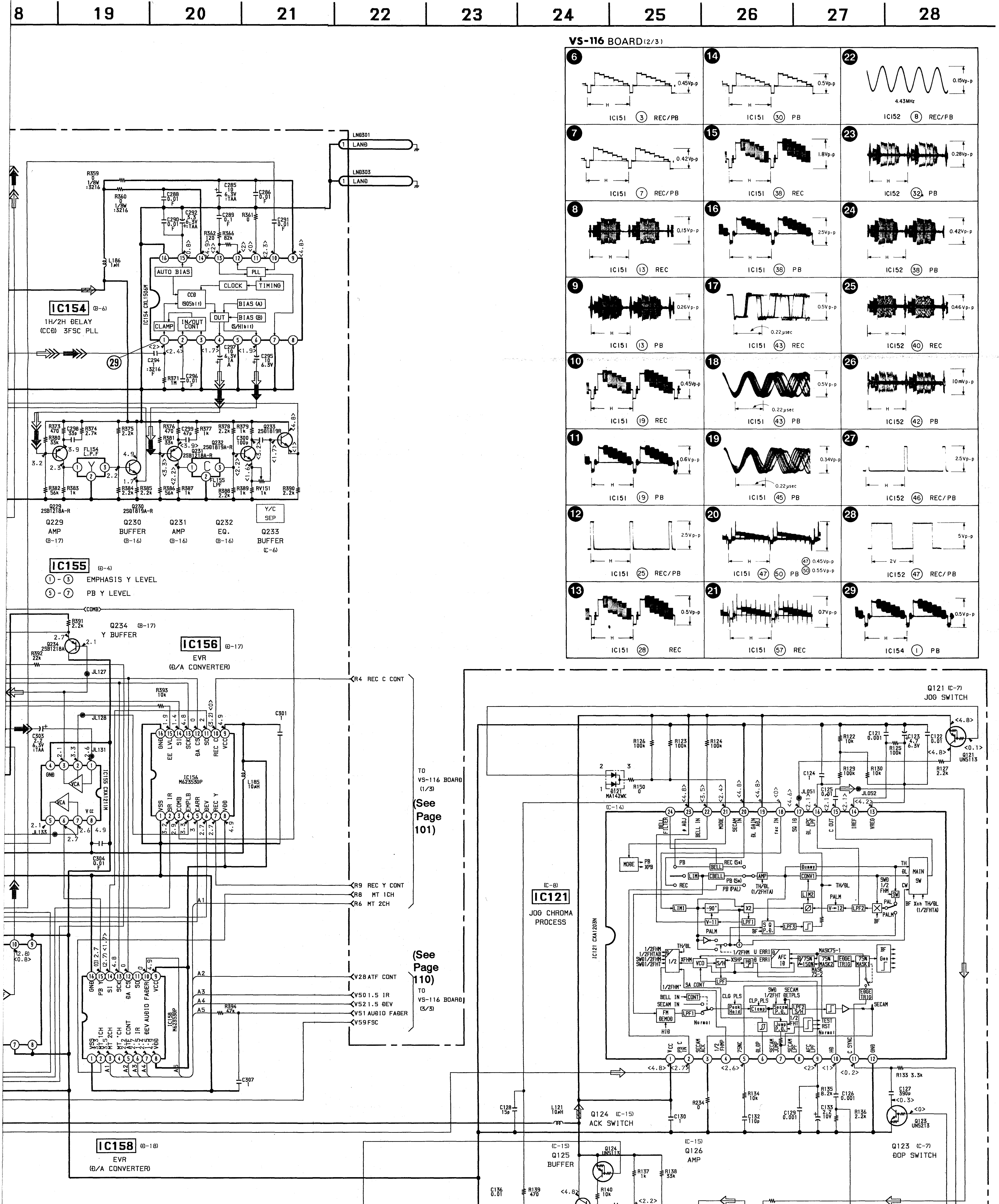
(See Page 110)
TO VS-116 BOARD (3/3)
V3 EC VIDEO GND
V11 V OUT SW
V18 JOG VD
V26 CAM/LINE
V10 V1 SWP
V34 VTR SYNC
V32 DATA TO SLAVE
V31 SCK
V30 VIDEO CS
V29 VIDEO D/A CS
(B-4) Q168 INVERTER
IC151 (B-4) Y PROCESS
IC151 CXA1207AR
IC152 CHROMA PROCESS (B-14)
IC152 CXA1208R
IC154 (B-6) 1H/2H DELAY (CCD) 3FSC PLL
IC154 CXL1504M
AUTO BIAS
PLL
CLOCK
TIMING
BIAS (A)
BIAS (B)
Q229 AMP (B-17)
Q230 BUFFER (B-16)
Q231 AMP (B-16)
Q232 EQ. (B-16)
Q233 BUFFER (C-6)
Y/C SEP
IC155 (B-4)
①-③ EMPHASIS Y LEVEL
⑤-⑦ PB Y LEVEL
IC155 CXA1211M
Q234 (B-17) Y BUFFER
IC156 (B-17) EVR (D/A CONVERTER)
IC156 M62353GP
Q207 CLIP LEVEL SWITCH (B-18)
(B-17) Q214 CLIP LEVEL SWITCH
Q205 (B-19) DOC DET SWITCH
(C-18) Q208 ACK SWITCH
(B-12) Q212 BUFFER
(C-12) Q210 SWITCH
Q226 UN5113 SWITCH (B-12)
Q008 BUFFER (B-7)
IC159 (D-17) CARRIER SET DEVIATION ADJ
IC159 CXA1452
IC158 (D-18) EVR (D/A CONVERTER)
IC158 M62353GP
FL152 BPF
FL153 B.P.F
FL154 L.P.F
FL155 LPF
X151 4.43MHz
Q204 C AMP
(A-18) Q221 DOC P SWITCH
(B-15) Q222, 223 (C-14) BUFFER INVERTER
Q219, Q220 SWITCH
Q189 BUFFER
Q200 RN1302
Q160 UN5113


8
19
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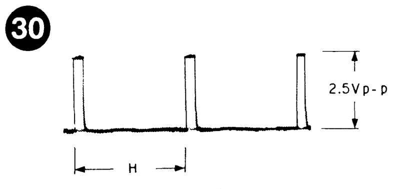
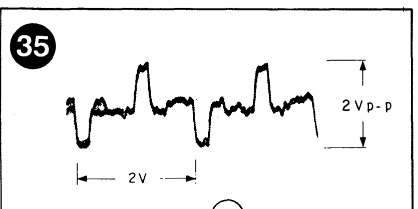
27
28
VS-116 BOARD(2/3)
IC151 ③ REC/PB 0.45Vp-p
IC151 ㉚ PB 0.5Vp-p
IC152 ⑧ REC/PB 0.15Vp-p 4.43MHz
IC151 ⑦ REC/PB 0.42Vp-p
IC151 ㊳ REC 1.8Vp-p
IC152 ㉜ PB 0.28Vp-p
IC151 ⑬ REC 0.15Vp-p
IC151 ㊳ PB 2.5Vp-p
IC152 ㊳ PB 0.42Vp-p
IC151 ⑬ PB 0.26Vp-p
IC151 ㊸ REC 0.5Vp-p 0.22μsec
IC152 ㊵ REC 0.46Vp-p
IC151 ⑲ REC 0.45Vp-p
IC151 ㊸ PB 0.5Vp-p 0.22μsec
IC152 ㊷ PB 10mVp-p
IC151 ⑲ PB 0.6Vp-p
IC151 ㊺ PB 0.34Vp-p 0.22μsec
IC152 ㊻ REC/PB 2.5Vp-p
IC151 ㉕ REC/PB 2.5Vp-p
IC151 ㊼ ㊿ PB ㊼ 0.45Vp-p ㊿ 0.55Vp-p
IC152 ㊼ REC/PB 5Vp-p 2V
IC151 ㉘ REC 0.5Vp-p
IC151 (57) REC 0.7Vp-p
IC154 ① PB 0.5Vp-p
IC154 (B-6) 1H/2H DELAY (CCD) 3FSC PLL
IC154 CXL1506M
AUTO BIAS
CCD (905bit)
CLOCK
TIMING
PLL
BIAS (A)
BIAS (B)
CLAMP
IN/OUT CONT
OUT
S/H(bit)
LN0301 LAND
LN0303 LAND
Q229 AMP (B-17)
Q230 BUFFER (B-16)
Q231 AMP (B-16)
Q232 EQ. (B-16)
Q233 BUFFER (C-6)
Y/C SEP
FL154 L.P.F
FL155 LPF
IC155 (B-4)
①-③ EMPHASIS Y LEVEL
⑤-⑦ PB Y LEVEL
Q234 (B-17) Y BUFFER
IC156 (B-17) EVR (D/A CONVERTER)
IC156 M62353GP
IC131 CXA1211M
IC158 (B-18) EVR (D/A CONVERTER)
IC158 M62353GP
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO VS-116 BOARD (1/3)
(See Page 101)
V28 ATF CONT
V50 1.5 IR
V52 1.5 DEV
V51 AUDIO FADER
V59 FSC
(See Page 110)
TO VS-116 BOARD (3/3)
IC121 (C-8) JOG CHROMA PROCESS
IC121 CXA1203N
Q121 (C-7) JOG SWITCH
Q123 (C-7) DOP SWITCH
Q124 (C-15) ACK SWITCH
Q125 (C-15) BUFFER
Q126 (C-15) AMP
FL121 B.P.F
D121 MA142WK
no mark:REC/PB mode
( ):REC mode
< >:PB mode
VS-116 BOARD (2/3)

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

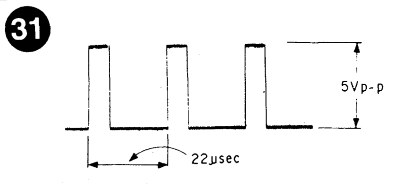
VS-116 BOARD(3/3)



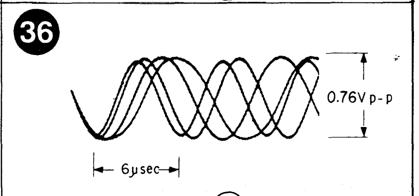
IC402 (64) REC/PB



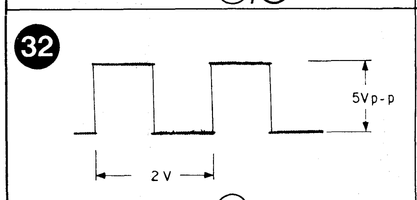
IC404 ⑮ PB



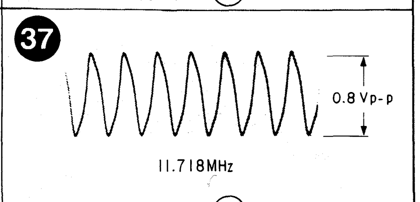
IC402 (73),(74) REC/PB



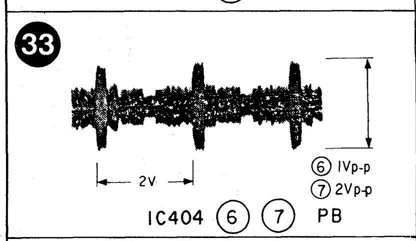
IC404 ⑱ REC



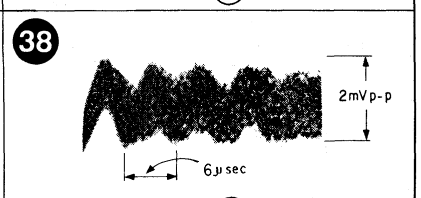
IC402 (97) REC/PB



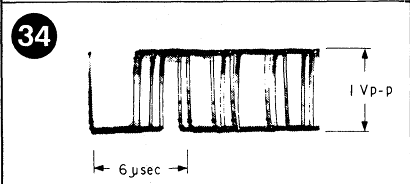
IC404 ㉓ REC/PB



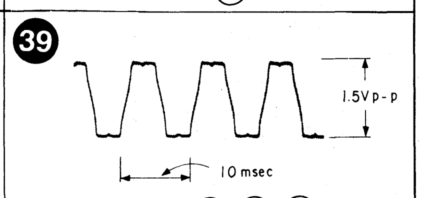
IC404 ⑥ ⑦ PB



IC404 ㊽ PB



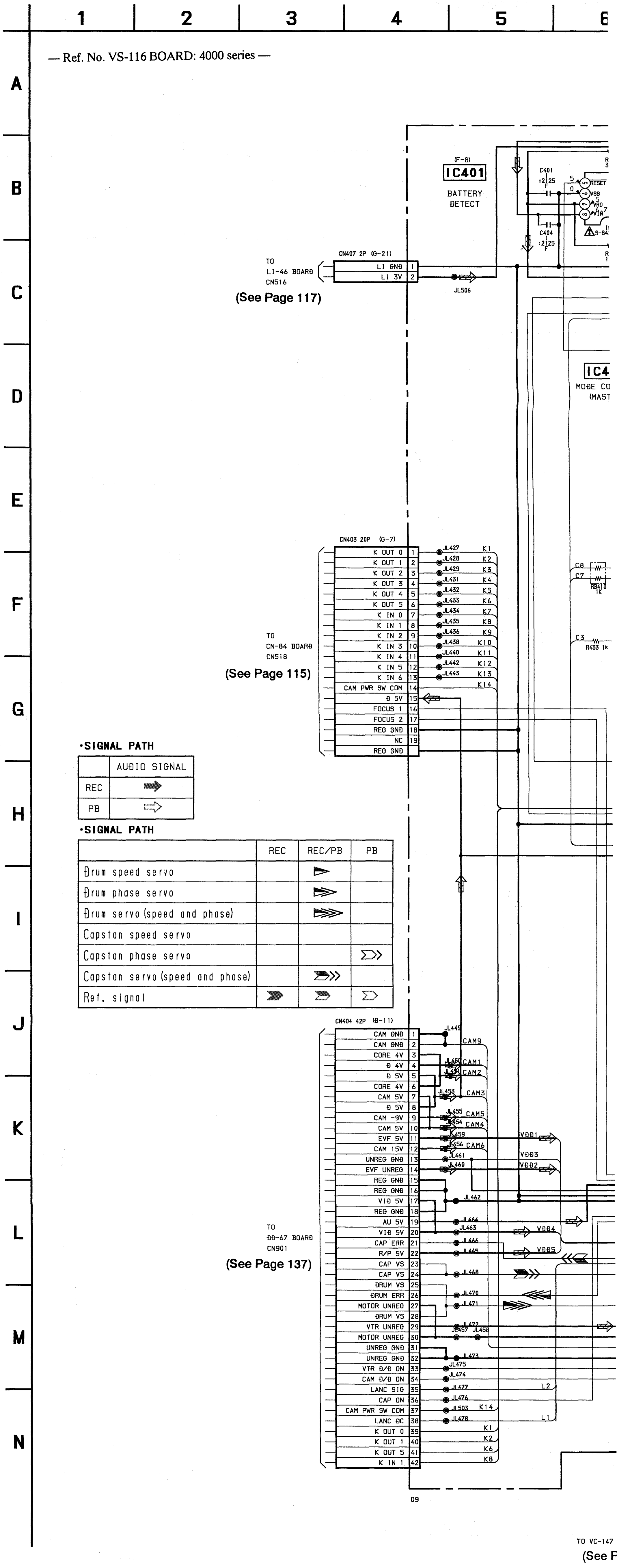
IC404 ⑨ REC/PB



IC408 ⑭,⑯,⑱ REC/PB

VS-116 (SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAM

• Refer to page


1
2
3
4
5
A
B
C
D
E
F
G
H
I
J
K
L
M
N
(F-8)
IC401
BATTERY DETECT
C401
:2125
F
C404
:2125
F
RESET
VSS
VRO
VIN
S-84
IC4
MODE CO
(MAST
CN407 2P (G-21)
LI GND 1
LI 3V 2
JL506
TO
LI-46 BOARD
CN516
(See Page 117)
CN403 20P (G-7)
K OUT 0 1
K OUT 1 2
K OUT 2 3
K OUT 3 4
K OUT 4 5
K OUT 5 6
K IN 0 7
K IN 1 8
K IN 2 9
K IN 3 10
K IN 4 11
K IN 5 12
K IN 6 13
CAM PWR SW COM 14
D 5V 15
FOCUS 1 16
FOCUS 2 17
REG GND 18
NC 19
REG GND
JL427 K1
JL428 K2
JL429 K3
JL431 K4
JL432 K5
JL433 K6
JL434 K7
JL435 K8
JL436 K9
JL438 K10
JL440 K11
JL442 K12
JL443 K13
K14
C8
C7
RB410 1K
C3
R433 1k
TO
CN-84 BOARD
CN518
(See Page 115)
CN404 42P (D-11)
CAM GND 1
CAM GND 2
CORE 4V 3
D 4V 4
D 5V 5
CORE 4V 6
CAM 5V 7
D 5V 8
CAM -9V 9
CAM 5V 10
EVF 5V 11
CAM 15V 12
UNREG GND 13
EVF UNREG 14
REG GND 15
REG GND 16
VID 5V 17
REG GND 18
AU 5V 19
VID 5V 20
CAP ERR 21
R/P 5V 22
CAP VS 23
CAP VS 24
DRUM VS 25
DRUM ERR 26
MOTOR UNREG 27
DRUM VS 28
VTR UNREG 29
MOTOR UNREG 30
UNREG GND 31
UNREG GND 32
VTR D/D ON 33
CAM D/D ON 34
LANC SIG 35
CAP ON 36
CAM PWR SW COM 37
LANC DC 38
K OUT 0 39
K OUT 1 40
K OUT 5 41
K IN 1 42
JL449
CAM9
JL450 CAM1
JL451 CAM2
JL453 CAM3
JL455 CAM5
JL454 CAM4
JL459
VDD1
JL456 CAM6
JL461
VDD3
JL460
VDD2
JL462
JL464
JL463
VDD4
JL466
JL465
VDD5
JL468
JL470
JL471
JL472
JL457 JL458
JL473
JL475
JL474
JL477 L2
JL476
JL503 K14
JL478 L1
K1
K2
K6
K8
TO
DD-67 BOARD
CN901
(See Page 137)
09
TO VC-147
(See P

— Ref. No. VS-116 BOARD: 4000 series —

·SIGNAL PATH

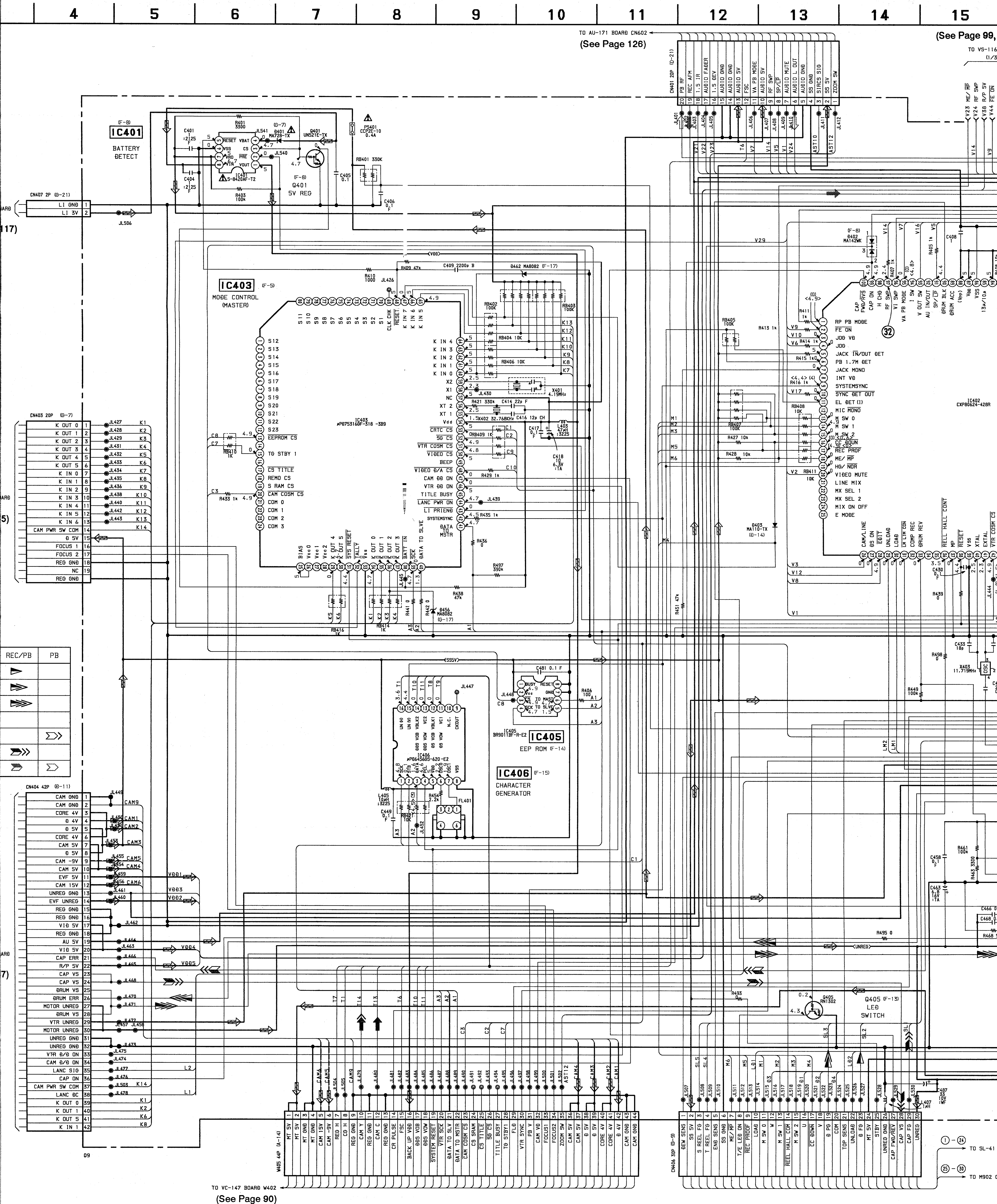
	AUDIO SIGNAL
REC	➡
PB	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶>	
Drum servo (speed and phase)		▶>>	
Capstan speed servo			
Capstan phase servo			⊐>>
Capstan servo (speed and phase)		➤>>	
Ref. signal	➤	➤	⊐>

SCHEMATIC DIAGRAM

• Refer to page 95 for Printed Wiring Board.


4
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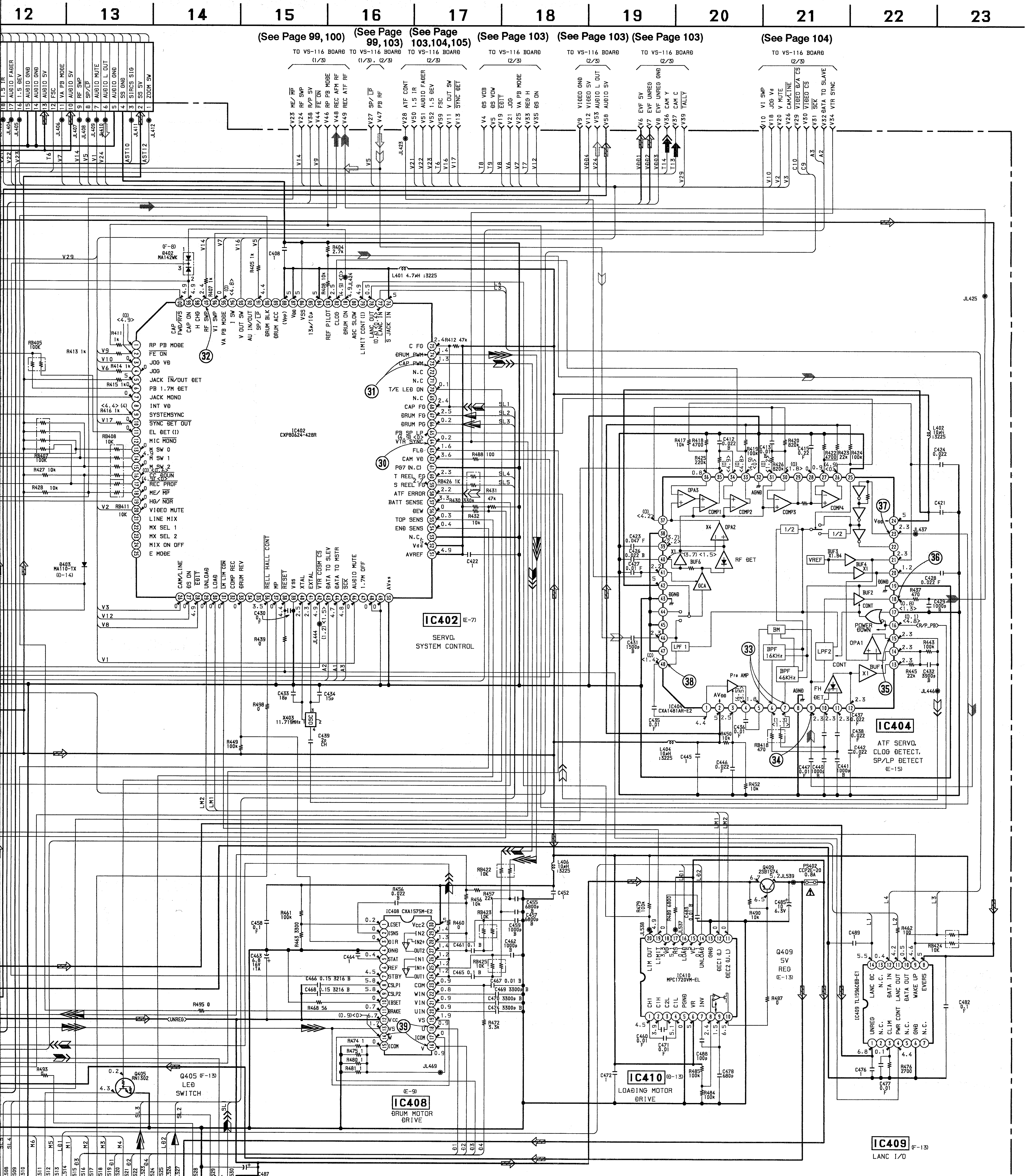
15
TO AU-171 BOARD CN602
(See Page 126)
(See Page 99,
TO VS-116
CN401 20P (D-21)
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.5 DEV
AUDIO GND
AUDIO GND
FSC
VA PB MODE
AUDIO 5V
RF SWP
SP/LP
AUDIO MUTE
AUDIO L OUT
AUDIO GND
SS GND
SIRCS SIG
SS 5V
ZOOM SW
(F-8)
IC401
BATTERY DETECT
S-8420AF-T2
R401 3300
D401 MA728-TX
Q401 UN521E-TX
(F-8) Q401 5V REG
PS401 CCP2E-10 0.4A
RB401 330K
CN407 2P (G-21)
LI GND
LI 3V
IC403
(F-5)
MODE CONTROL (MASTER)
IC403 μPD75316GF-318-3B9
X401 4.19MHz
X402 32.768KHz
EEPROM CS
TG STBY 1
CS TITLE
REMO CS
S RAM CS
CAM COSM CS
CRTC CS
SG CS
VTR COSM CS
VIDEO CS
BEEP
VIDEO D/A CS
CAM DD ON
VTR DD ON
TITLE BUSY
LANC PWR ON
LI PRIEND
SYSTEMSYNC
DATA EQ MSTR
CN403 20P (G-7)
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
D 5V
FOCUS 1
FOCUS 2
REG GND
NC
REG GND
REC/PB
PB
IC405
BR9011BF-R-E2
EEP ROM (F-14)
IC406
(F-15)
CHARACTER GENERATOR
IC406 μPD6453GS-620-E2
FL401
IC402 CXP80624-428R
RP PB MODE
FE ON
JOG VD
JOG
JACK IN/OUT DET
PB 1.7M DET
JACK MONO
INT VD
SYSTEMSYNC
SYNC DET OUT
EL DET (1)
MIC MONO
MODE SW 0
M SW 1
M SW 2
CC DOWN
REC PROF
ME/MP
HG/NOR
VIDEO MUTE
LINE MIX
MX SEL 1
MX SEL 2
MIX ON OFF
E MODE
D403 MA110-TX (D-14)
D402 MA142WK
X403 11.719MHz
Q405 (F-13)
LED SWITCH
Q405 RN1302
CN404 42P (B-11)
CAM GND
CORE 4V
D 4V
D 5V
CORE 4V
CAM 5V
D 5V
CAM -9V
CAM 5V
EVF 5V
CAM 15V
UNREG GND
EVF UNREG
REG GND
VIO 5V
AU 5V
CAP ERR
R/P 5V
CAP VS
DRUM VS
DRUM ERR
MOTOR UNREG
VTR UNREG
MOTOR UNREG
UNREG GND
VTR D/D ON
CAM D/D ON
LANC SIG
CAP ON
CAM PWR SW COM
LANC DC
K OUT 0
K OUT 1
K OUT 5
K IN 1
W405 44P (A-14)
MT 5V
MT GND
CAM 15V
CAM -9V
REG H
CG H
REG GND
CAM Y
CAM C
REG GND
CR PULSE
FSC
BACK UP VDD
OSD VOB
OSD VOW
SYSTEM RESET
VTR SCK
DATA TO SLV
DATA TO MSTR
CAM COSM CS
CS SRAM
CS TITLE
SG CS
TITLE BUSY
TG STBY1
FLD
VTR SYNC
PB V
CAM VD
FOCUS1
FOCUS2
ZOOM SW
CAM 5V
D 5V
CORE 4V
D 4V
CAM GND
TO VC-147 BOARD W402
(See Page 90)
CN406 30P (G-9)
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
REG GND
ME/MP
T/E LED ON
REC PROOF
LOAD
M SW 0
M SW 1
REEL HALL COM
M SW 2
U
CC DOWN
D PG
COM
TOP SENS
UNLOAD
D FG
MT 5V
STBY
UNREG GND
CAP FWD/REV
CAP VS
CAP FG
UNREG
TO SL-41
TO M902


12
13
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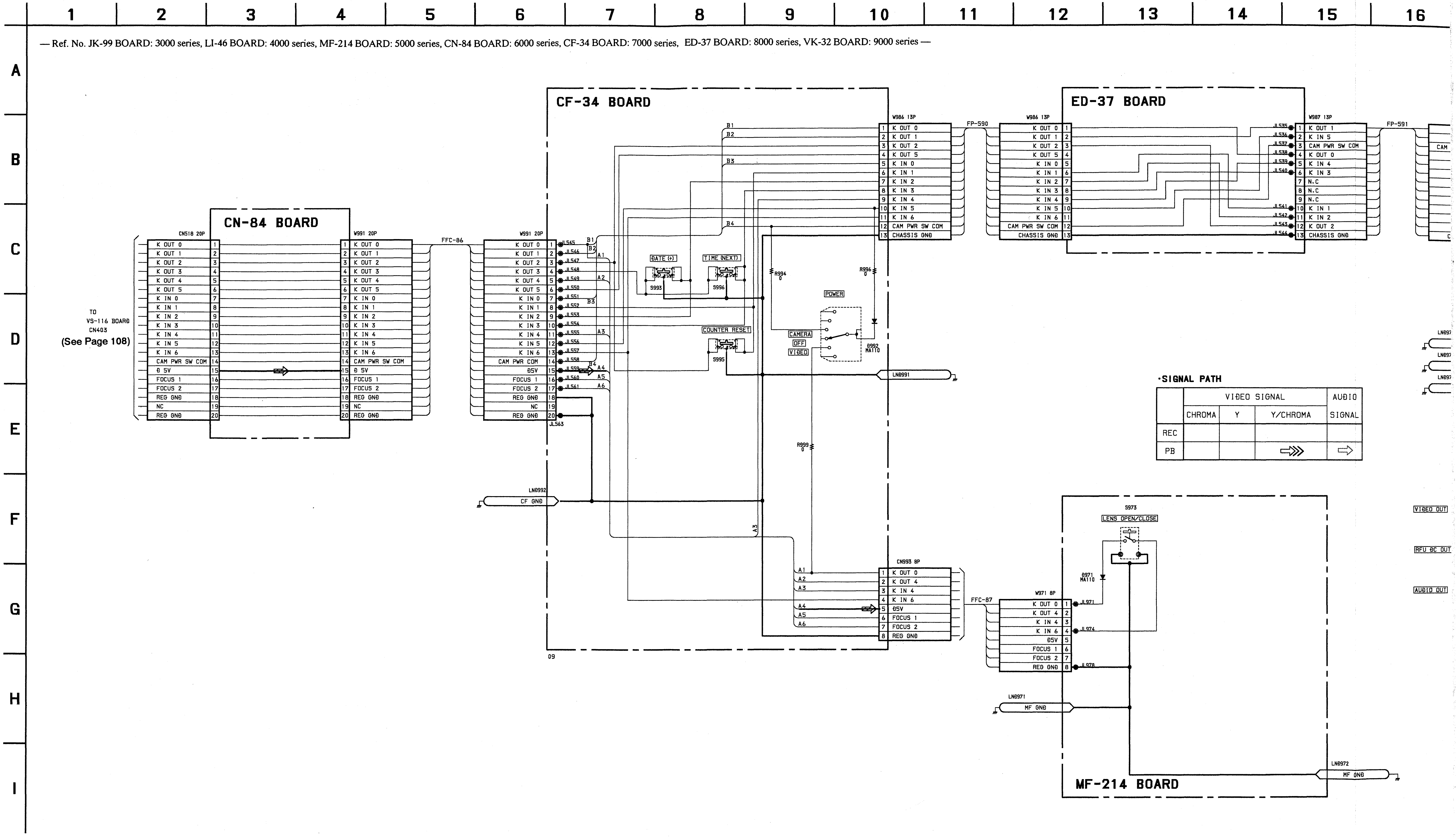
23
(See Page 99, 100)
(See Page 99, 103)
(See Page 103, 104, 105)
(See Page 103)
(See Page 103)
(See Page 103)
(See Page 104)
TO VS-116 BOARD (1/3)
TO VS-116 BOARD (1/3), (2/3)
TO VS-116 BOARD (2/3)
IC402 CXP80624-428R
IC402 (E-7)
SERVO, SYSTEM CONTROL
IC404 CXA1481AR-E2
IC404
ATF SERVO, CLOG DETECT, SP/LP DETECT
(E-15)
IC408 CXA1575M-E2
IC408
DRUM MOTOR DRIVE
(E-9)
IC410 MPC1720VM-EL
IC410 (D-13)
LOADING MOTOR DRIVE
IC409 TL1596C8B-E1
IC409 (F-13)
LANC I/O
Q405 (F-13)
LED SWITCH
Q409
5V REG
(E-13)
X403 11.719MHz
L401 4.7μH
no mark: REC/PB mode
( ): REC/PB mode
< >: PB mode
VS-116 BOARD (3/3)
①-㉔ TO SL-41 BOARD W522 (See Page 122)
㉕-㉚ TO M902 CAPSTAN MOTOR (See Page 121)

SERVO, SYSTEM CONTROL

CF-34 (CAMERA FUNCTION), CN-84 (BOARD LINK), ED-37 (BOARD LINK), MF-214 (LENS SWITCH), VK-32 (VTR FUNCTION), JK-99 (VIDEO/AUDIO JACK), LI-46 (LITHIUM BATTERY HOLDER) SCHEMATIC DIAGRAM

— Ref. No. JK-99 BOARD: 3000 series, LI-46 BOARD: 4000 series, MF-214 BOARD: 5000 series, CN-84 BOARD: 6000 series, CF-34 BOARD: 7000 series, ED-37 BOARD: 8000 series, VK-32 BOARD: 9000 series —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14
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16
A
B
C
D
E
F
G
H
I
TO
VS-116 BOARD
CN403
(See Page 108)
CN-84 BOARD
CN518 20P
W991 20P
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
D 5V
FOCUS 1
FOCUS 2
REG GND
NC
REG GND
FFC-86
CF-34 BOARD
W991 20P
CAM PWR COM
D5V
JL545
JL546
JL547
JL548
JL549
JL550
JL551
JL552
JL553
JL554
JL555
JL556
JL557
JL558
JL559
JL560
JL561
JL563
B1
B2
B3
B4
A1
A2
A3
A4
A5
A6
DATE (+)
S993
TIME (NEXT)
S996
COUNTER RESET
S995
R994
0
R996
0
POWER
CAMERA
OFF
VIDEO
D992
MA110
LN0991
R999
0
LN0992
CF GND
09
W986 13P
CHASSIS GND
FP-590
CN993 8P
FFC-87
ED-37 BOARD
W986 13P
W987 13P
JL535
JL536
JL537
JL538
JL539
JL540
JL541
JL542
JL543
JL544
N.C
FP-591
CAM
C
MF-214 BOARD
S973
LENS OPEN/CLOSE
D971
MA110
W971 8P
JL971
JL974
JL978
LN0971
MF GND
LN0972
MF GND
LN097
LN097
LN097
VIDEO OUT
RFU DC OUT
AUDIO OUT

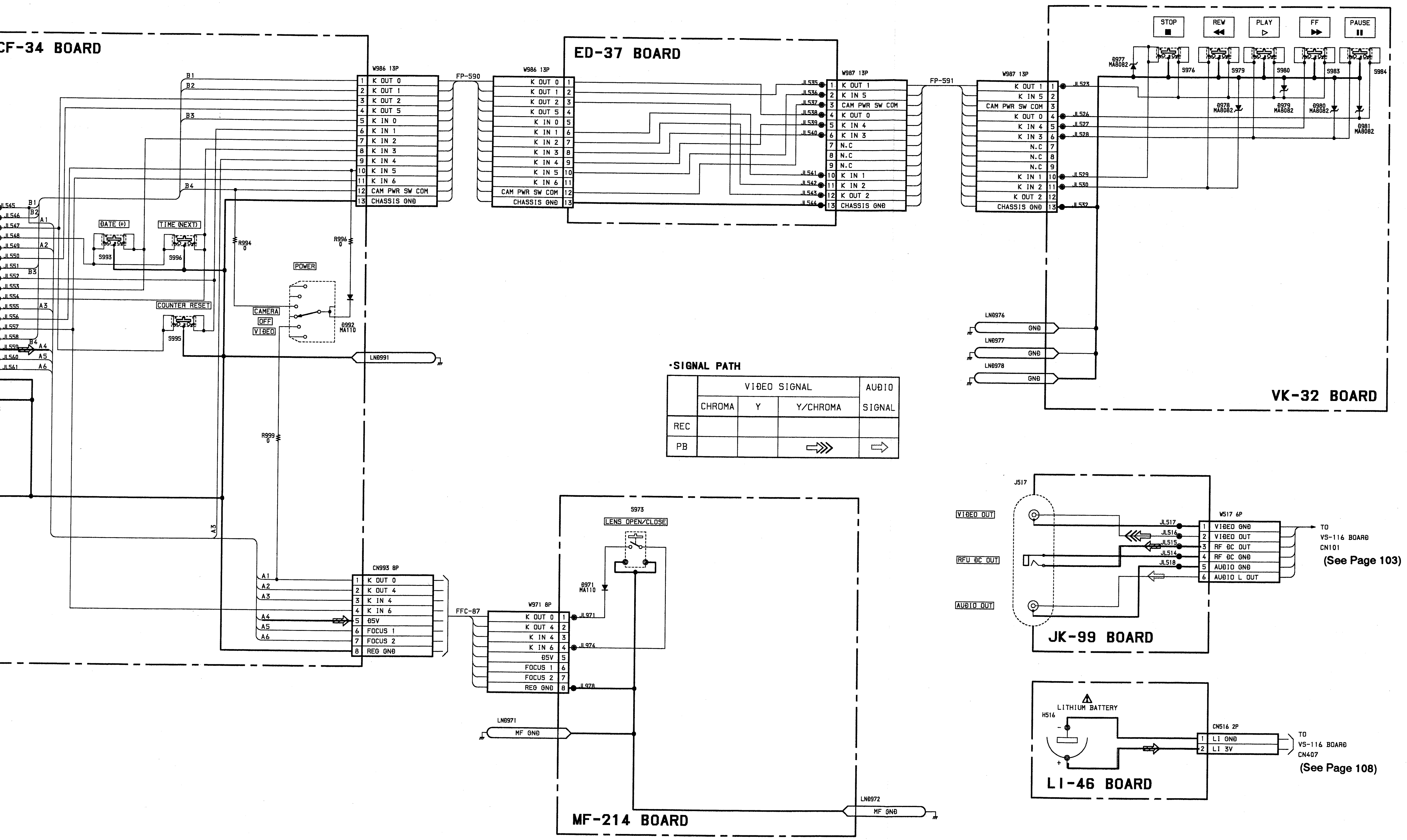
·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨⟫	⇨

WITCH), VK-32 (VTR FUNCTION), JK-99 (VIDEO/AUDIO JACK), LI-46 (LITHIUM BATTERY HOLDER) SCHEMATIC DIAGRAM

7 8 9 10 11 12 13 14 15 16 17 18 19 20

, CF-34 BOARD: 7000 series, ED-37 BOARD: 8000 series, VK-32 BOARD: 9000 series —

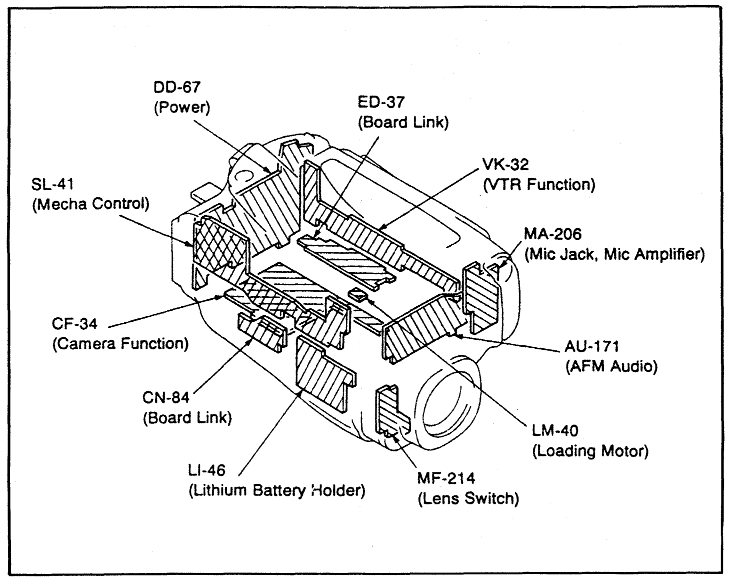

CF-34 BOARD
ED-37 BOARD
VK-32 BOARD
JK-99 BOARD
LI-46 BOARD
MF-214 BOARD
W986 13P
W987 13P
FP-590
FP-591
K OUT 0
K OUT 1
K OUT 2
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
CHASSIS GND
N.C
STOP
REW
PLAY
FF
PAUSE
S976
S979
S980
S983
S984
D977 MA8082
D978 MA8082
D979 MA8082
D980 MA8082
D981 MA8082
DATE (+)
TIME (NEXT)
COUNTER RESET
S993
S996
S995
R994 0
R996 0
R999 0
POWER
CAMERA
OFF
VIDEO
D992 MA110
LN8991
LN8976
LN8977
LN8978
GND
CN993 8P
D5V
FOCUS 1
FOCUS 2
REG GND
FFC-87
W971 8P
S973
LENS OPEN/CLOSE
D971 MA110
LN8971
LN8972
MF GND
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
W517 6P
VIDEO GND
RF DC OUT
RF DC GND
AUDIO GND
AUDIO L OUT
TO VS-116 BOARD CN101
(See Page 103)
LITHIUM BATTERY
H516
CN516 2P
LI GND
LI 3V
TO VS-116 BOARD CN407
(See Page 108)

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨⇨	⇨

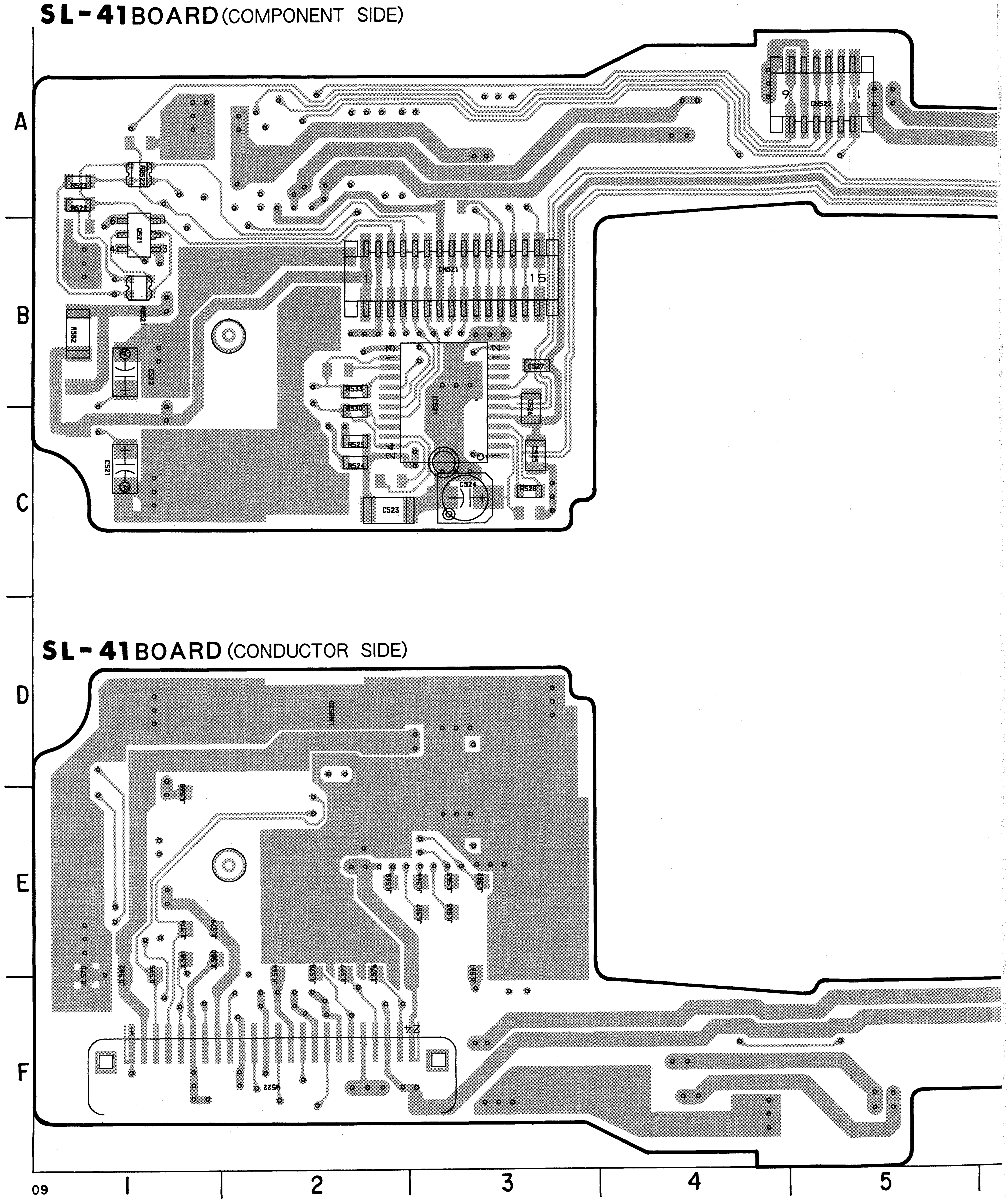
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

- Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.


DD-67
(Power)
ED-37
(Board Link)
VK-32
(VTR Function)
SL-41
(Mecha Control)
MA-206
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-171
(AFM Audio)
CN-84
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

SL-41 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-41 BOARD: 5000 series —


SL-41 BOARD (COMPONENT SIDE)
SL-41 BOARD (CONDUCTOR SIDE)
A
B
C
D
E
F
09
1
2
3
4
5
CN522
CN521
R523
R522
RB522
Q521
RB521
R532
C522
C521
R535
R530
R525
R524
IC521
C527
C526
C525
R528
C524
C523
LM520

S-33 boards are

tion)

06
Jack, Mic Amplifier)

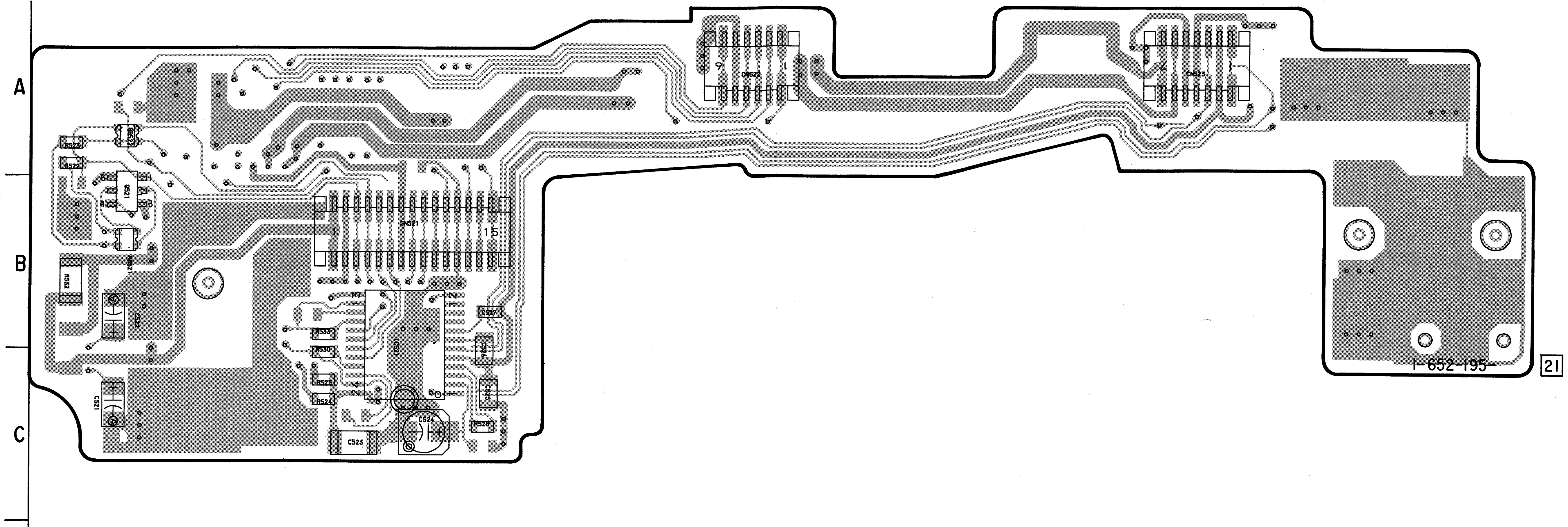
AU-171
(AFM Audio)

40
ding Motor)

SL-41 (MECHA CONTROL) PRINTED WIRING BOARD

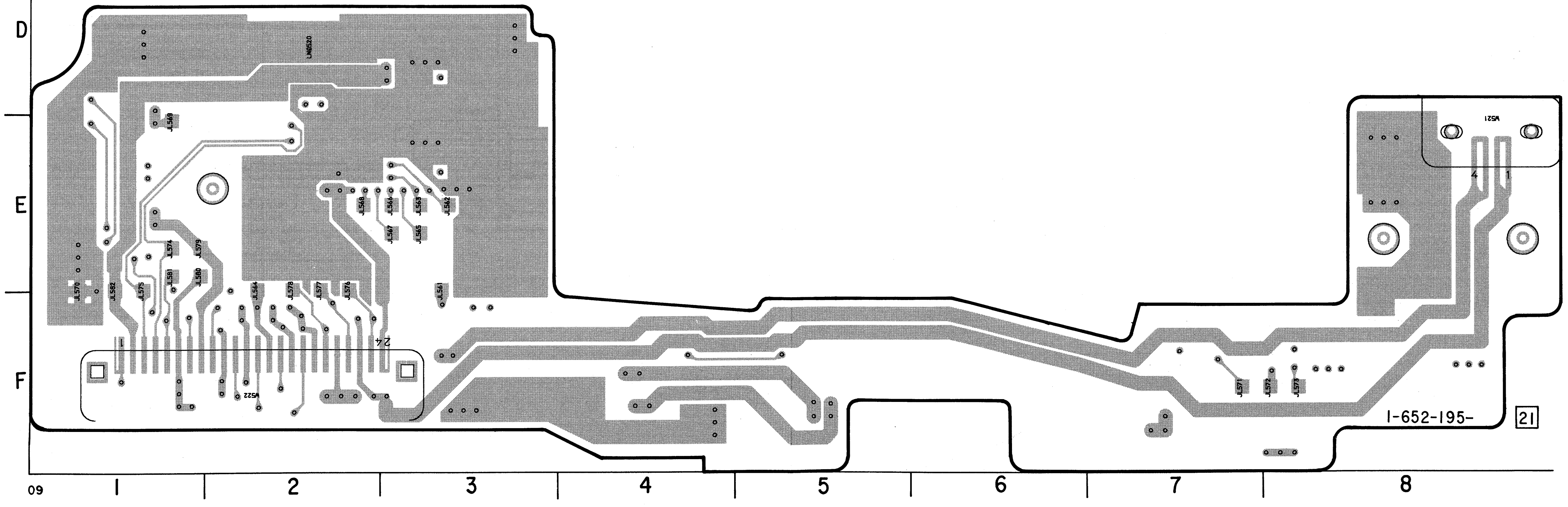
— Ref. No. SL-41 BOARD: 5000 series —

SL-41 BOARD (COMPONENT SIDE)



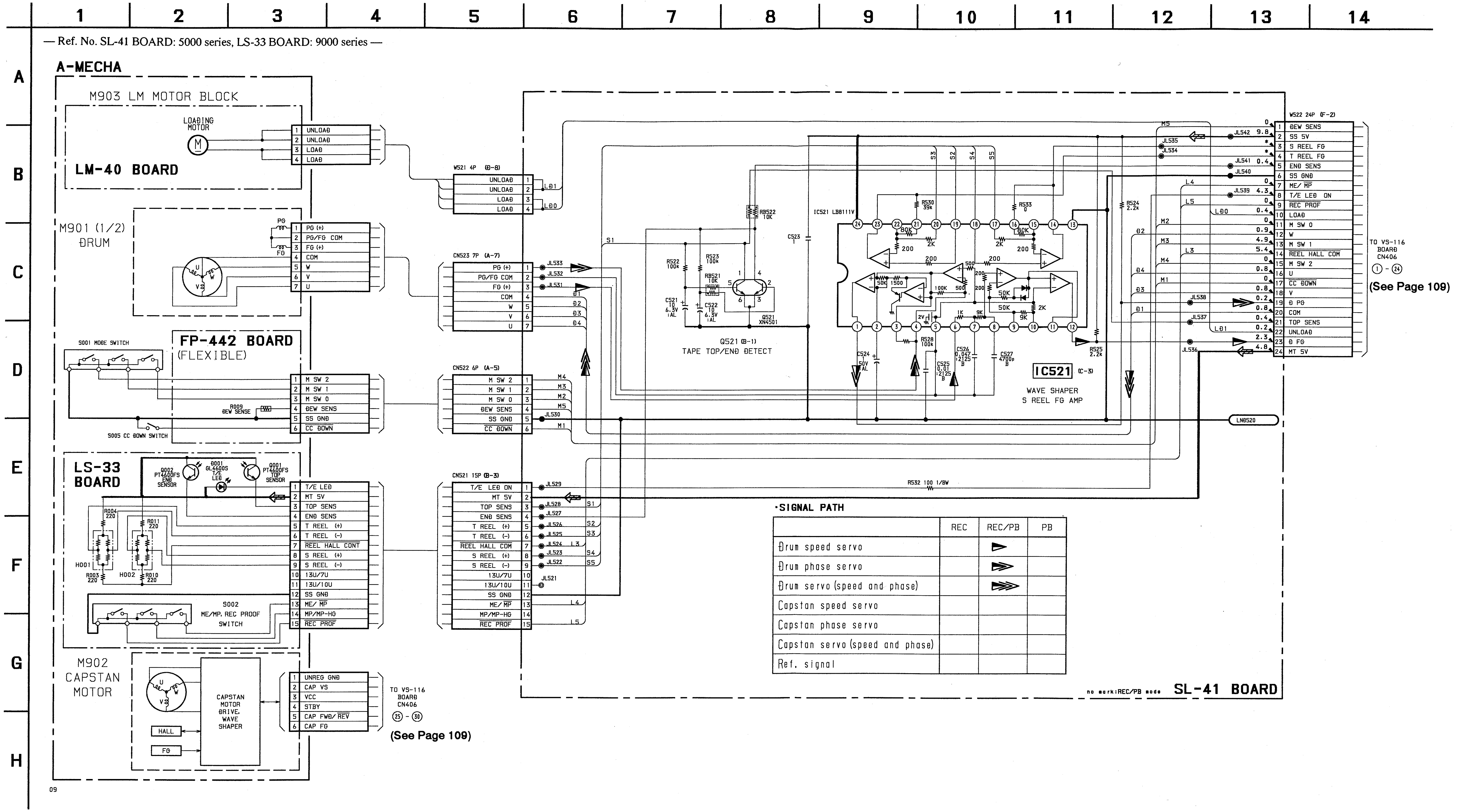
A
B
C
R523
R522
RB522
Q521
RB521
R532
C522
C521
CN522
CN523
CN521
1
15
13
12
24
IC521
R533
R530
R525
R524
C527
C526
C525
C524
R528
C523
9
1
7
1-652-195-
21

SL-41 BOARD (CONDUCTOR SIDE)



D
E
F
LM6520
JL569
JL568
JL566
JL563
JL562
JL567
JL565
JL574
JL579
JL581
JL580
JL582
JL575
JL570
JL564
JL578
JL577
JL576
JL561
JL571
JL572
JL573
CN522
24
1
MS21
4
1
1-652-195-
21
09
1
2
3
4
5
6
7
8

SL-41 (MECHA CONTROL), FP-442 (MODE SWITCH), LM-40 (LOADING MOTOR), LS-33 (TAPE SENSOR) SCHEMATIC DIAGRAM


1
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9
10
11
12
13
14
A
B
C
D
E
F
G
H
A-MECHA
M903 LM MOTOR BLOCK
LOADING MOTOR
LM-40 BOARD
UNLOAD
UNLOAD
LOAD
LOAD
M901 (1/2) DRUM
PG
FG
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
S001 MODE SWITCH
FP-442 BOARD (FLEXIBLE)
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
R009 DEW SENSE
S005 CC DOWN SWITCH
LS-33 BOARD
Q002 PT4600FS END SENSOR
D001 GL4600S T/E LED
Q001 PT4600FS TOP SENSOR
T/E LED
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL CONT
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
ME/MP
MP/MP-HG
REC PROOF
H001
H002
R004 220
R003 220
R011 220
R010 220
S002 ME/MP, REC PROOF SWITCH
M902 CAPSTAN MOTOR
HALL
FG
CAPSTAN MOTOR DRIVE, WAVE SHAPER
UNREG GND
CAP VS
VCC
STBY
CAP FWD/REV
CAP FG
TO VS-116 BOARD CN406 ㉕-㉚
(See Page 109)
W521 4P (B-8)
CN523 7P (A-7)
CN522 6P (A-5)
CN521 15P (B-3)
LD1
LD0
L4
L5
JL533
JL532
JL531
JL530
JL529
JL528
JL527
JL526
JL525
JL524
JL523
JL522
JL521
D1
D2
D3
D4
M1
M2
M3
M4
M5
S1
S2
S3
S4
S5
R522 100k
R523 100k
RB521 10K
RB522 10K
C521 10 6.3V :AL
C522 10 6.3V :AL
Q521 XN4501
Q521 (B-1) TAPE TOP/END DETECT
C523
IC521 LB8111V
R530 39k
R533 0
R524 2.2k
R525 2.2k
R528 100k
C524 1 50V :AL
C525 0.01 :2125 B
C526 0.047 :2125 B
C527 4700p B
IC521 (C-3) WAVE SHAPER S REEL FG AMP
R532 100 1/8W
LND520
JL542
JL541
JL540
JL539
JL538
JL537
JL536
JL535
JL534
W522 24P (F-2)
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
SS GND
ME/MP
T/E LED ON
REC PROOF
LOAD
M SW 0
W
M SW 1
REEL HALL COM
M SW 2
U
CC DOWN
V
D PG
COM
TOP SENS
UNLOAD
D FG
MT 5V
TO VS-116 BOARD CN406 ①-㉔
(See Page 109)
no mark:REC/PB mode
SL-41 BOARD
09

— Ref. No. SL-41 BOARD: 5000 series, LS-33 BOARD: 9000 series —

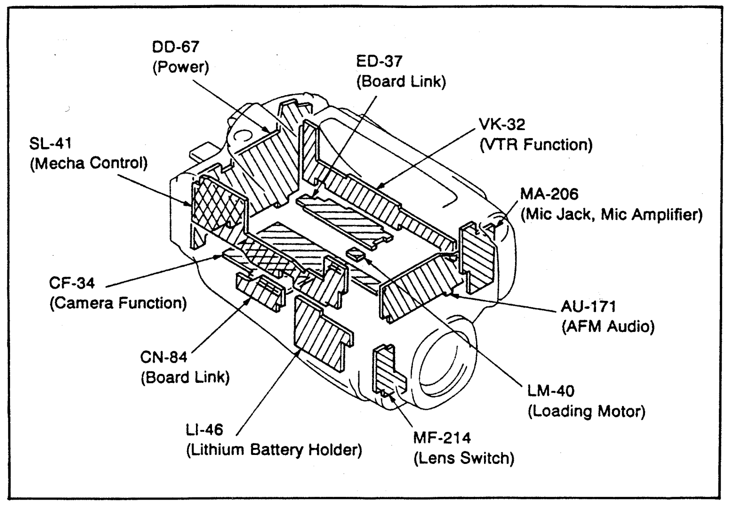
·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			

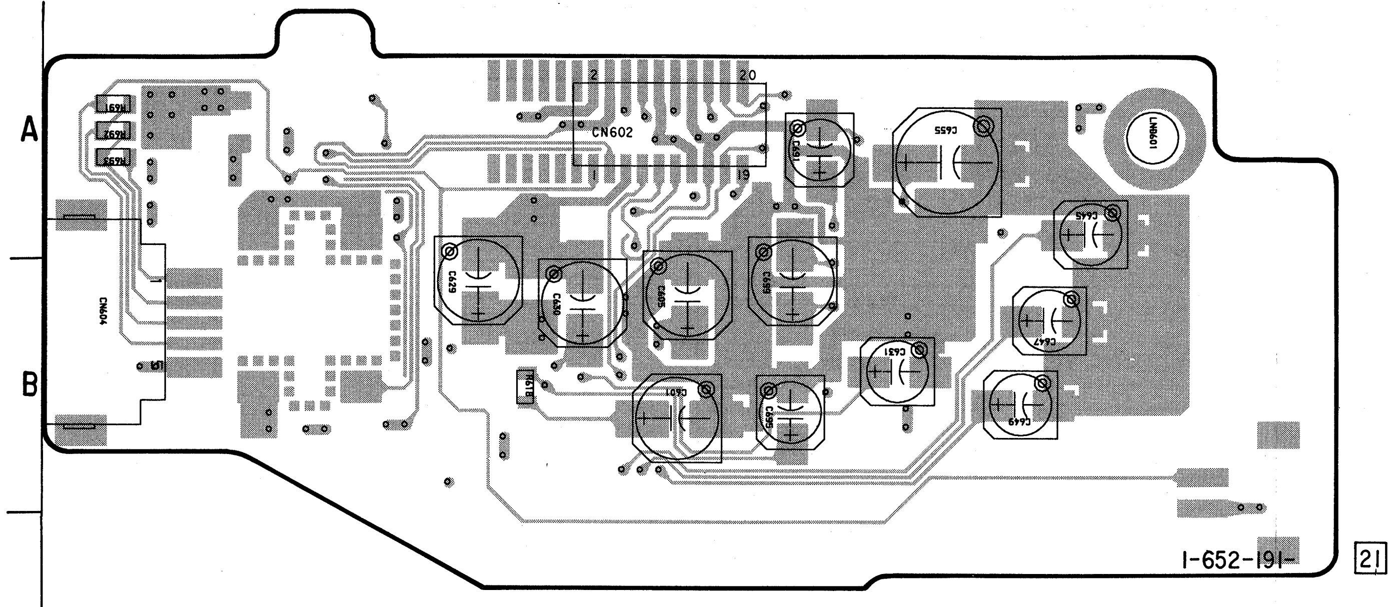
- Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.

AU-171 (AFM AUDIO), MA-206 (MIC JACK, MIC AMPLIFIER) PRINTED WIRING BOARDS

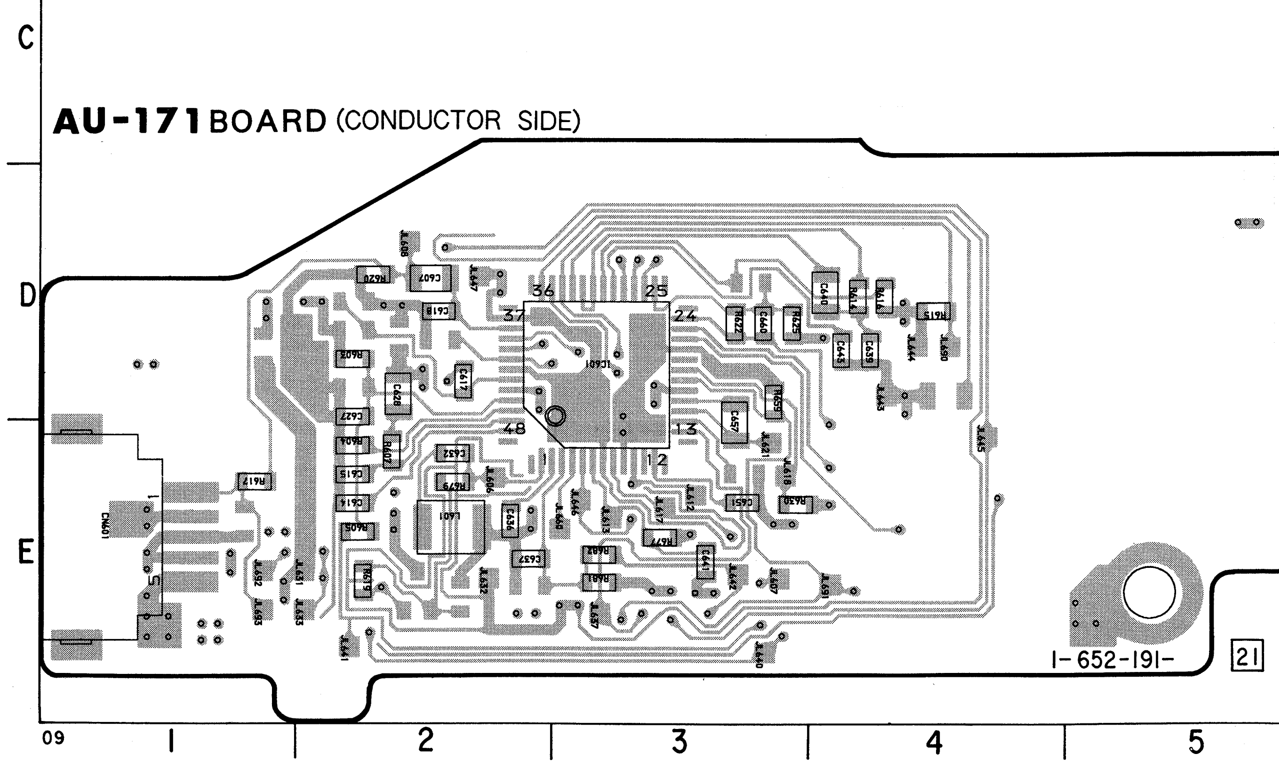
— Ref. No. AU-171, MA-206 BOARDS: 2000 series —


DD-67
(Power)
ED-37
(Board Link)
VK-32
(VTR Function)
SL-41
(Mecha Control)
MA-206
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-171
(AFM Audio)
CN-84
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

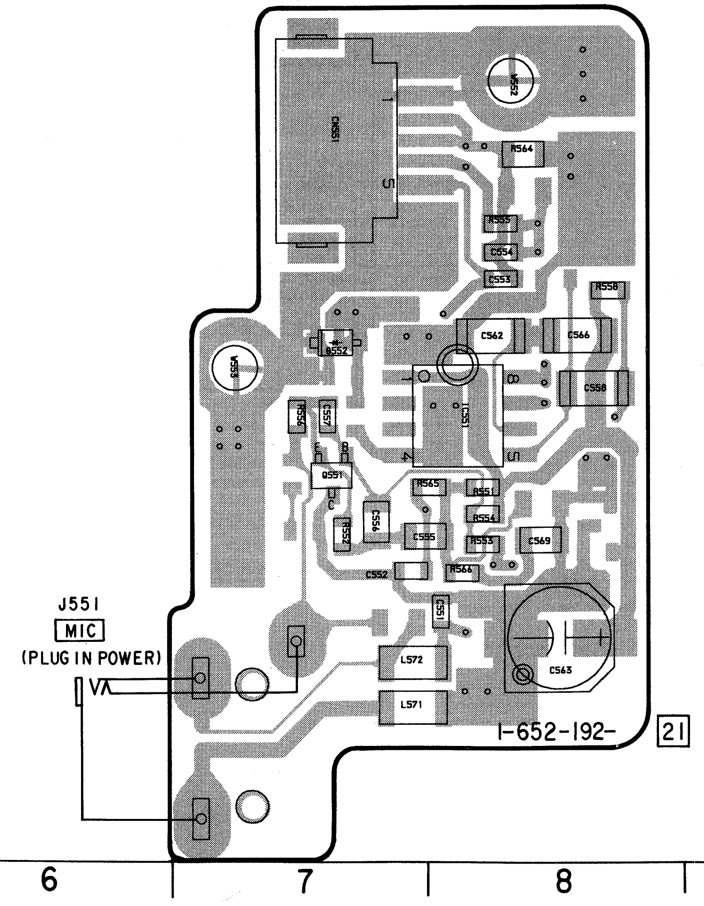
AU-171 BOARD (COMPONENT SIDE)


A
B
CN602
2
20
19
C655
C629
C630
C635
C659
C647
C651
C601
C625
C649
C643
C681
R618
CN604
LM601
1-652-191-
21

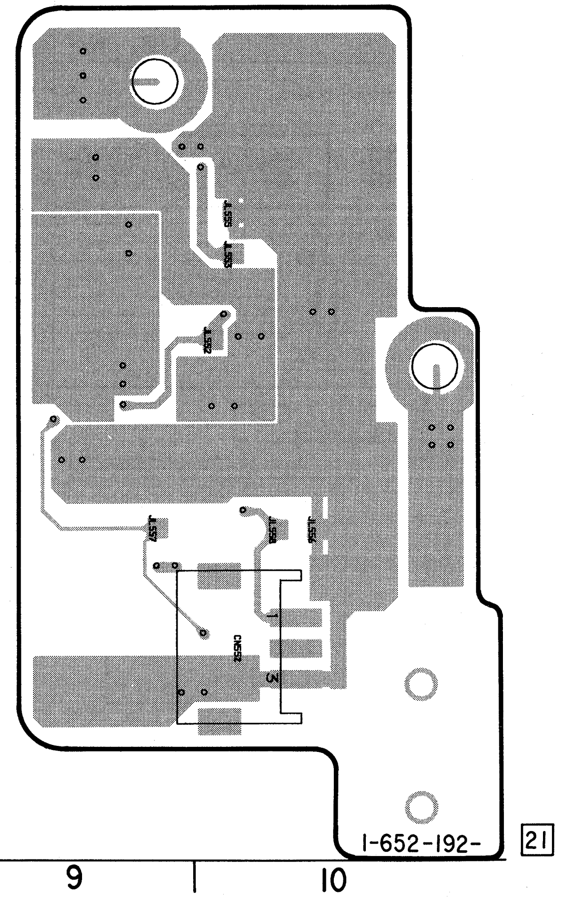
AU-171 BOARD (CONDUCTOR SIDE)


C
D
E
IC601
36
25
37
24
48
13
1
12
CN601
1-652-191-
21
09
1
2
3
4
5

MA-206 BOARD (COMPONENT SIDE)

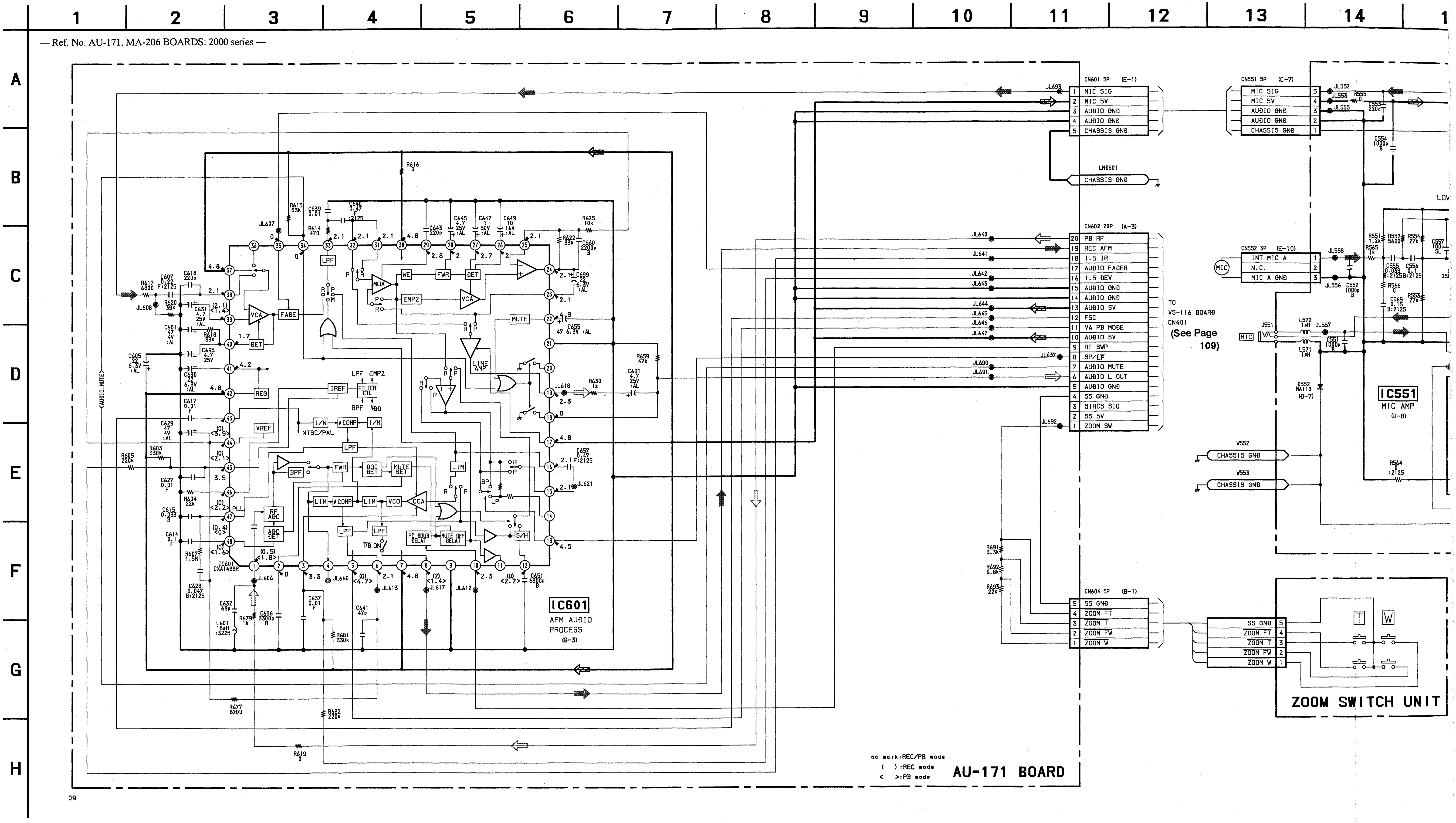

CN551
1
5
R564
R555
C554
C553
R558
C562
C566
C568
IC551
Q551
R565
R551
R554
R553
C569
C555
R566
C552
C551
LS72
LS71
C563
J551
MIC
(PLUG IN POWER)
1-652-192-
21
6
7
8

MA-206 BOARD (CONDUCTOR SIDE)


CN552
1-652-192-
21
9
10

AU-171 (AFM AUDIO), MA-206 (MIC JACK, MIC AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. AU-171, MA-206 BOARDS: 2000 series —



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7
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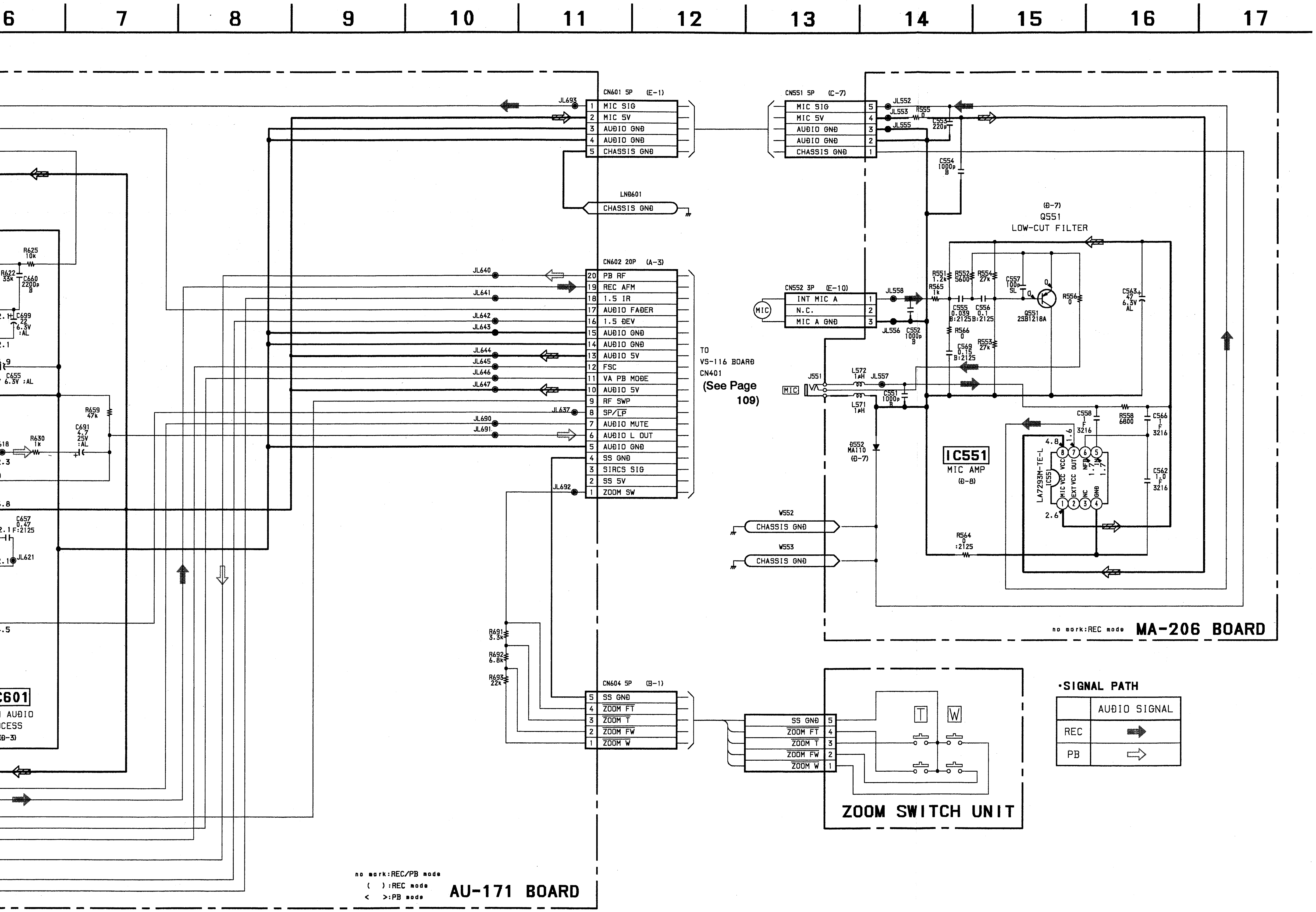
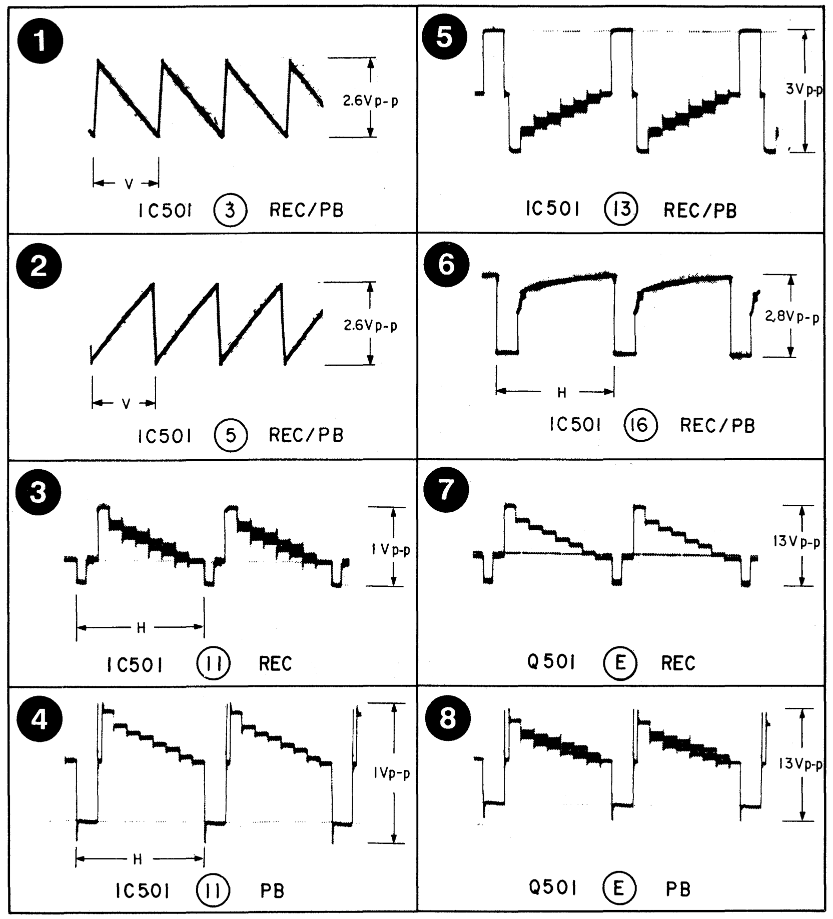
9
10
11
12
13
14
A
B
C
D
E
F
G
H
CN601 5P (E-1)
1 MIC SIG
2 MIC 5V
3 AUDIO GND
4 AUDIO GND
5 CHASSIS GND
LN0601
CHASSIS GND
CN602 20P (A-3)
20 PB RF
19 REC AFM
18 1.5 IR
17 AUDIO FADER
16 1.5 DEV
15 AUDIO GND
14 AUDIO GND
13 AUDIO 5V
12 FSC
11 VA PB MODE
10 AUDIO 5V
9 RF SWP
8 SP/LP
7 AUDIO MUTE
6 AUDIO L OUT
5 AUDIO GND
4 SS GND
3 SIRCS SIG
2 SS 5V
1 ZOOM SW
TO
VS-116 BOARD
CN401
(See Page
109)
CN604 5P (B-1)
5 SS GND
4 ZOOM FT
3 ZOOM T
2 ZOOM FW
1 ZOOM W
CN551 5P (C-7)
MIC SIG 5
MIC 5V 4
AUDIO GND 3
AUDIO GND 2
CHASSIS GND 1
CN552 3P (E-10)
INT MIC A 1
N.C. 2
MIC A GND 3
MIC
J551
W552
CHASSIS GND
W553
CHASSIS GND
IC551
MIC AMP
(B-8)
SS GND 5
ZOOM FT 4
ZOOM T 3
ZOOM FW 2
ZOOM W 1
T
W
ZOOM SWITCH UNIT
IC601
AFM AUDIO
PROCESS
(B-3)
IC601
CXA1488R
VCA
FADE
DET
REG
VREF
IREF
FILTER CTL
LPF EMP2
BPF VDD
I/N
ϕCOMP
I/M
NTSC/PAL
LPF
BPF
FWR
ADC DET
MUTE DET
RF AGC
AGC DET
LIM
VCO
CCA
PC DOUB DELAY
MUTE OFF DELAY
PB ON
S/H
MOA
WE
EMP2
MUTE
LINE AMP
SP
LP
<AUDIO_MUTE>
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-171 BOARD
09
LOW

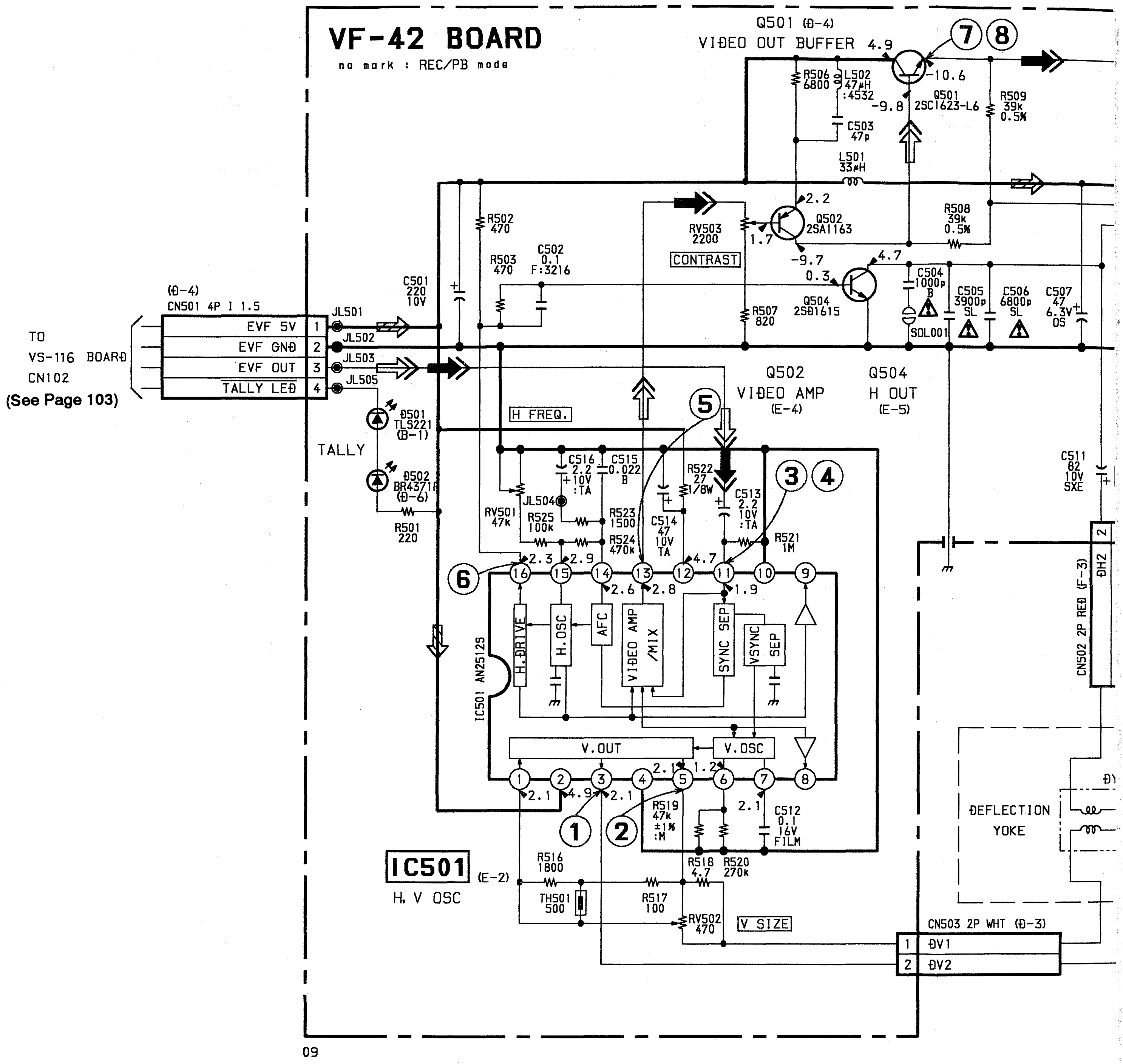

6
7
8
9
10
11
12
13
14
15
16
17
CN601 5P (E-1)
1 MIC SIG
2 MIC 5V
3 AUDIO GND
4 AUDIO GND
5 CHASSIS GND
JL693
LND601
CHASSIS GND
CN602 20P (A-3)
20 PB RF
19 REC AFM
18 1.5 IR
17 AUDIO FADER
16 1.5 DEV
15 AUDIO GND
14 AUDIO GND
13 AUDIO 5V
12 FSC
11 VA PB MODE
10 AUDIO 5V
9 RF SWP
8 SP/LP
7 AUDIO MUTE
6 AUDIO L OUT
5 AUDIO GND
4 SS GND
3 SIRCS SIG
2 SS 5V
1 ZOOM SW
JL640
JL641
JL642
JL643
JL644
JL645
JL646
JL647
JL637
JL690
JL691
JL692
TO
VS-116 BOARD
CN401
(See Page
109)
R625 10k
R622 33k
C660 2200p B
C699 22 6.3V :AL
C655 6.3V :AL
R659 47k
C691 4.7 25V :AL
R630 1k
C657 0.47 F:2125
JL621
IC601
AUDIO
PROCESS
(B-3)
R691 3.3k
R692 6.8k
R693 22k
CN604 5P (B-1)
5 SS GND
4 ZOOM FT
3 ZOOM T
2 ZOOM FW
1 ZOOM W
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-171 BOARD
CN551 5P (C-7)
MIC SIG 5
MIC 5V 4
AUDIO GND 3
AUDIO GND 2
CHASSIS GND 1
JL552
JL553
JL555
R555 0
C553 220p
C554 1000p B
CN552 3P (E-10)
INT MIC A 1
N.C. 2
MIC A GND 3
MIC
JL558
JL556
C552 1000p B
J551
MIC
L572 1μH
JL557
L571 1μH
C551 1000p B
D552 MA110 (B-7)
(B-7)
Q551
LOW-CUT FILTER
R551 1.2k
R552 5600
R554 27k
R565 1k
C555 0.039 B:2125
C556 0.1 B:2125
C557 100p SL
Q551 2SB1218A
R556 0
R566 0
C569 0.15 B:2125
R553 27k
C563 47 6.3V AL
C558 1 F 3216
R558 6800
C566 1 F 3216
C562 1.0 F 3216
IC551
MIC AMP
(B-8)
LA7293M-TE-L
IC551
MIC VCC
EXT VCC
NC
GND
VCC
OUT
NFB
4.8
1.6
1.7
1.7
2.6
W552
CHASSIS GND
W553
CHASSIS GND
R564 0 :2125
no mark:REC mode
MA-206 BOARD
SS GND 5
ZOOM FT 4
ZOOM T 3
ZOOM FW 2
ZOOM W 1
T
W
ZOOM SWITCH UNIT
·SIGNAL PATH
AUDIO SIGNAL
REC
PB

VF-42 BOARD



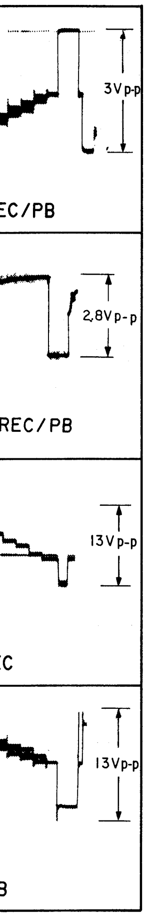
VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-42 BOARD: 1000 series —

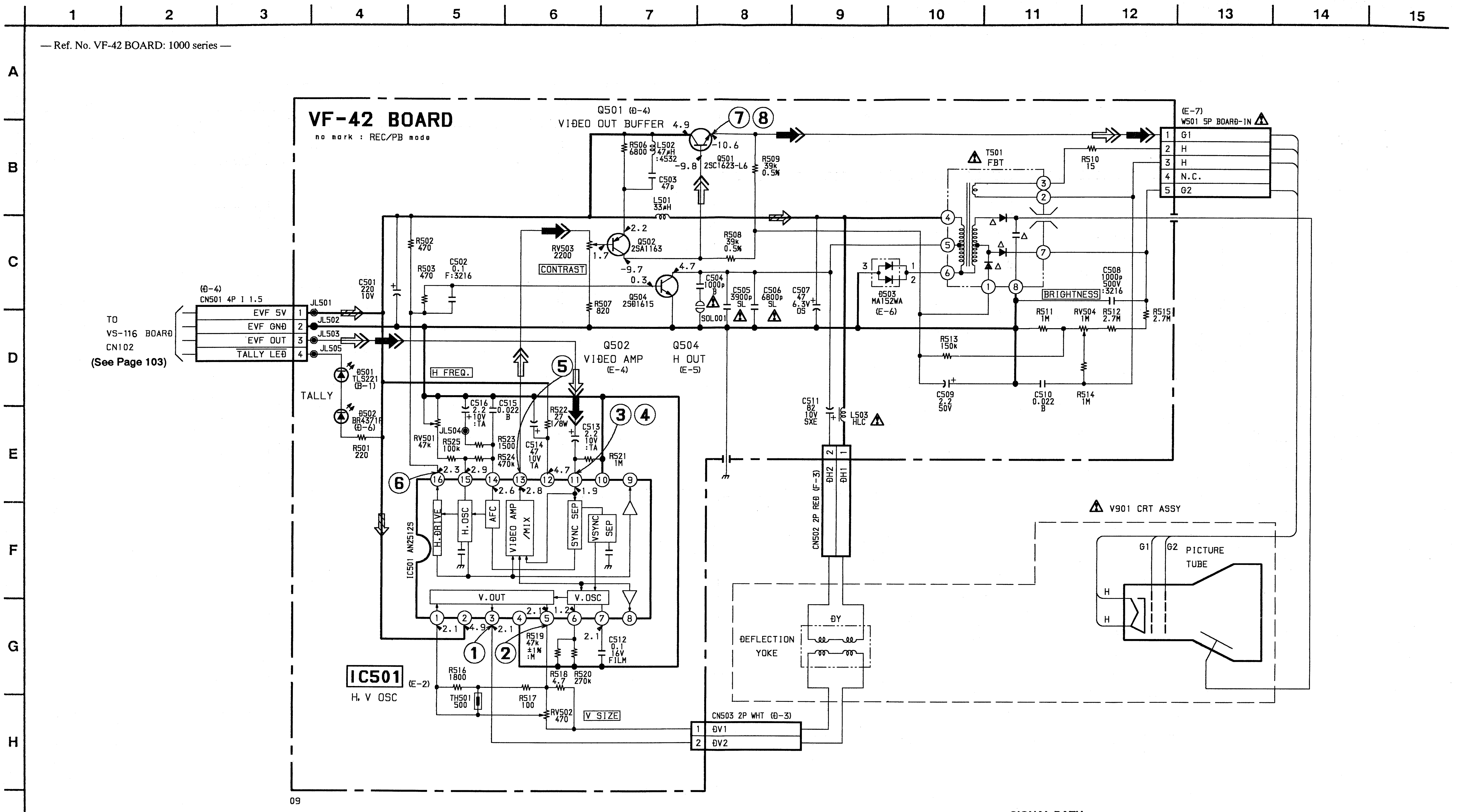

VF-42 BOARD
no mark : REC/PB mode
Q501 (B-4)
VIDEO OUT BUFFER
⑦⑧
R506 6800
L502 47μH :4532
Q501 2SC1623-L6
C503 47p
L501 33μH
R509 39k 0.5%
R502 470
R503 470
C502 0.1 F:3216
C501 220 10V
RV503 2200
CONTRAST
Q502 2SA1163
R508 39k 0.5%
Q504 2SD1615
R507 820
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SOL001
(B-4)
CN501 4P I 1.5
JL501
JL502
JL503
JL505
EVF 5V
EVF GND
EVF OUT
TALLY LED
TO
VS-116 BOARD
CN102
(See Page 103)
D501 TL5221 (B-1)
D502 BR4371F (B-6)
TALLY
R501 220
H FREQ.
Q502 VIDEO AMP (E-4)
Q504 H OUT (E-5)
C516 2.2 10V :TA
C515 0.022 B
R522 27 1/8W
C513 2.2 10V :TA
JL504
RV501 47k
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R521 1M
③④
⑤
⑥
IC501 AN2512S
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
① ②
IC501
(E-2)
H, V OSC
R516 1800
TH501 500
R517 100
R519 47k ±1% :M
R518 4.7
R520 270k
RV502 470
V SIZE
C512 0.1 16V FILM
C511 82 10V SXE
CN502 2P RED (F-3)
DEFLECTION YOKE
CN503 2P WHT (B-3)
DV1
DV2
09

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM



— Ref. No. VF-42 BOARD: 1000 series —



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A
B
C
D
E
F
G
H
I
VF-42 BOARD
no mark : REC/PB mode
Q501 (D-4)
VIDEO OUT BUFFER 4.9
⑦⑧
R506 6800
L502 47μH :4532
C503 47p
L501 33μH
-10.6
-9.8
Q501 2SC1623-L6
R509 39k 0.5W
(E-7)
W501 5P BOARD-IN
1 G1
2 H
3 H
4 N.C.
5 G2
T501 FBT
R510 15
R502 470
R503 470
C502 0.1 F:3216
RV503 2200
CONTRAST
2.2
1.7
Q502 2SA1163
-9.7
R508 39k 0.5W
4.7
0.3
Q504 2SD1615
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
R507 820
SOL001
D503 MA152WA (E-6)
BRIGHTNESS
C508 1000p 500V :3216
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 50V
C510 0.022 B
R514 1M
C501 220 10V
(D-4)
CN501 4P I 1.5
EVF 5V
EVF GND
EVF OUT
TALLY LED
JL501
JL502
JL503
JL505
TO
VS-116 BOARD
CN102
(See Page 103)
D501 TLS221 (B-1)
D502 BR4371F (D-6)
TALLY
R501 220
Q502
VIDEO AMP
(E-4)
Q504
H OUT
(E-5)
H FREQ.
C516 2.2 +10V :TA
C515 0.022 B
R522 27 1/8W
C513 2.2 10V :TA
JL504
RV501 47k
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R521 1M
⑤
③④
⑥
2.3
2.9
2.6
2.8
4.7
1.9
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
IC501 AN2512S
V.OUT
V.OSC
2.1
4.9
2.1
2.1
1.2
2.1
①
②
R519 47k ±1% :M
C512 0.1 16V FILM
R518 4.7
R520 270k
R516 1800
TH501 500
R517 100
RV502 470
V SIZE
IC501
H, V OSC
(E-2)
CN503 2P WHT (D-3)
1 DV1
2 DV2
C511 82 10V SXE
L503 HLC
CN502 2P RED (F-3)
DH2
DH1
V901 CRT ASSY
G1
G2
PICTURE TUBE
H
H
DY
DEFLECTION YOKE
09

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

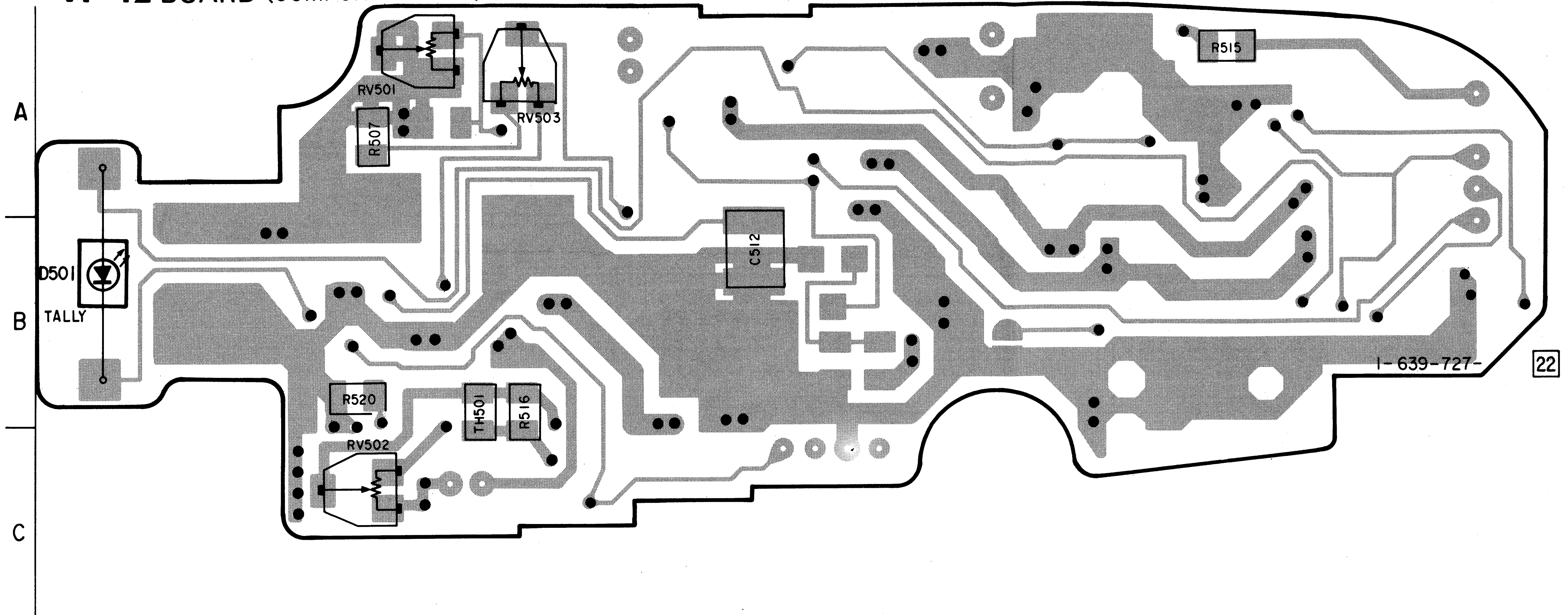
- **SIGNAL PATH**

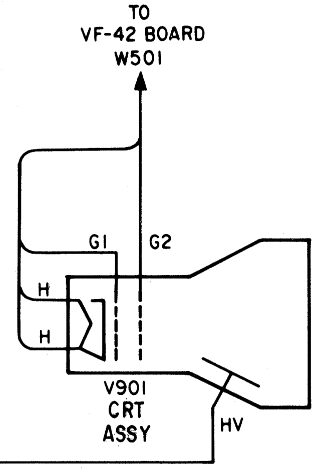
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	

VF-42 (VIEW FINDER) PRINTED WIRING BOARD

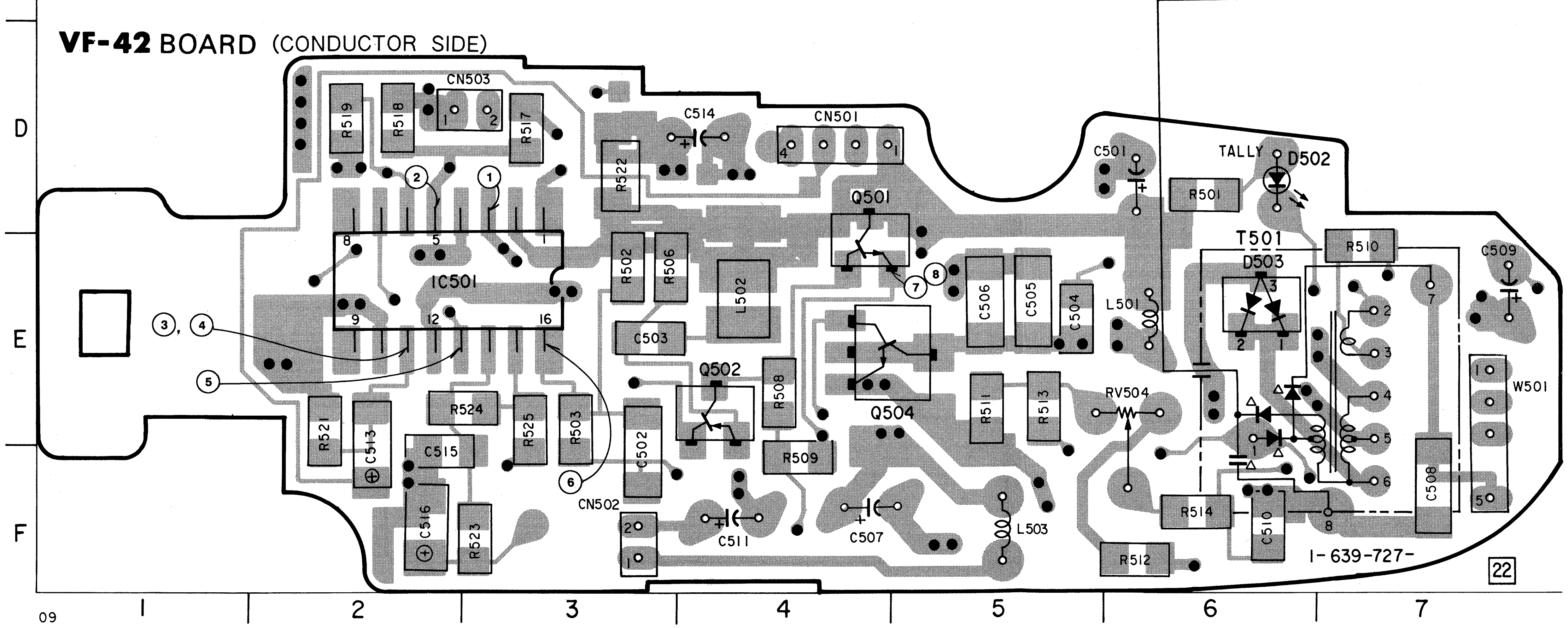
— Ref. No. VF-42 BOARD: 1000 series —

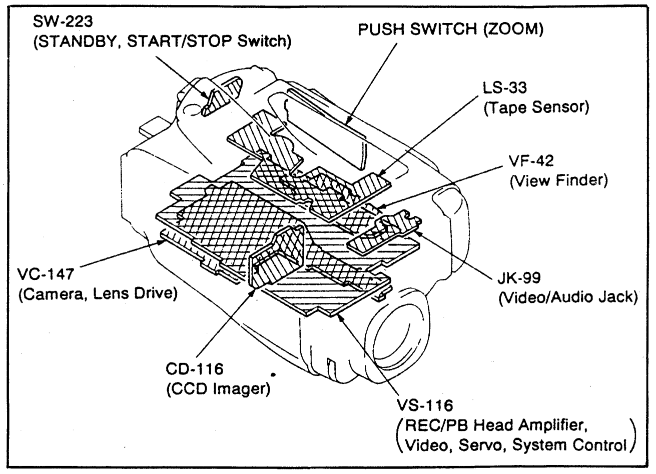
VF-42 BOARD (COMPONENT SIDE)


A
B
C
RV501
RV503
R507
D501
TALLY
C512
R515
R520
TH501
R516
RV502
1-639-727-
22


TO
VF-42 BOARD
W501
G1
G2
H
H
V901
CRT
ASSY
HV

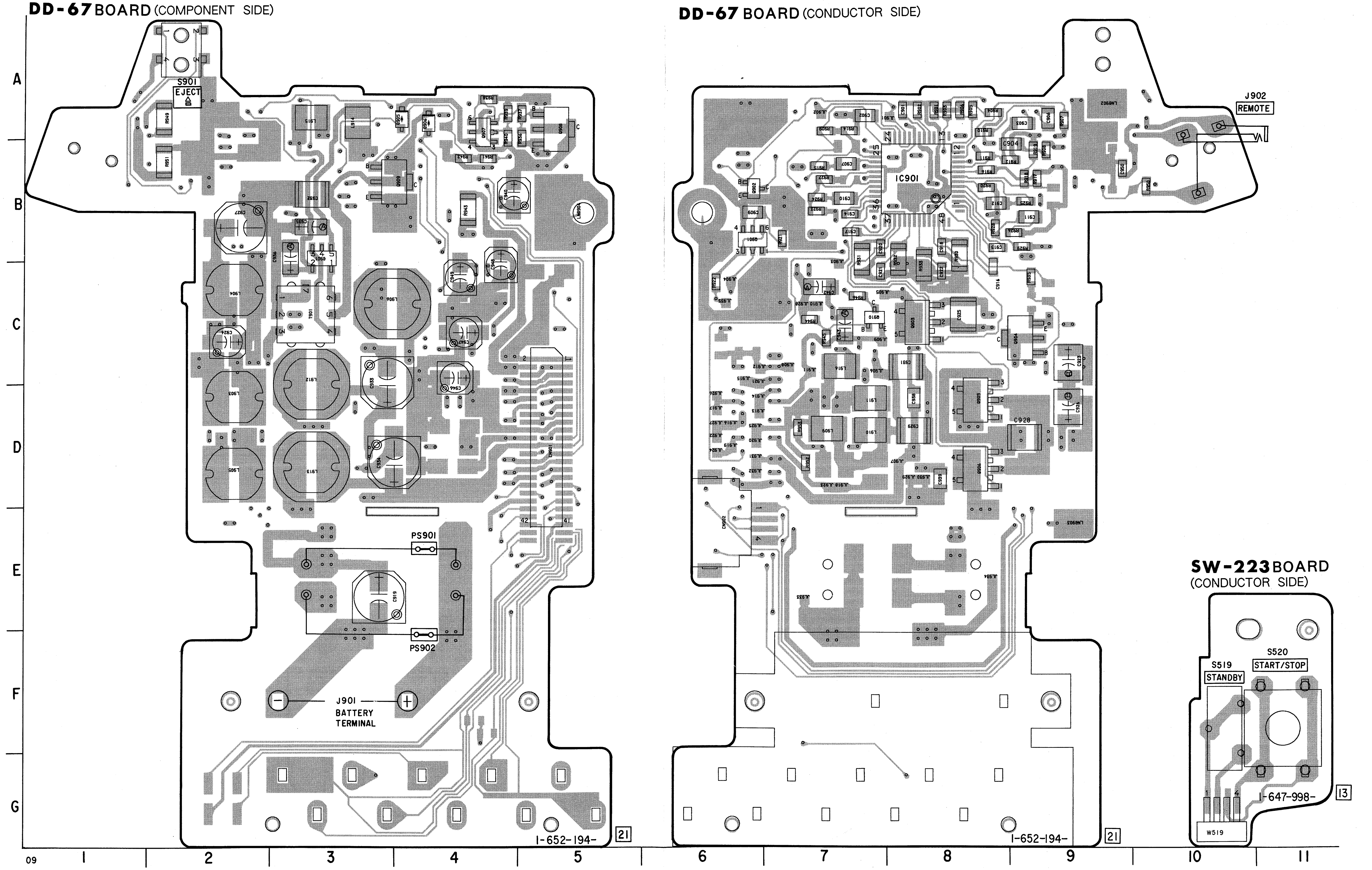
VF-42 BOARD (CONDUCTOR SIDE)


D
E
F
09
1
2
3
4
5
6
7
CN503
R519
R518
R517
C514
CN501
R522
C501
TALLY
D502
R501
Q501
①
②
IC501
8
5
1
9
12
16
③, ④
⑤
R502
R506
L502
⑦
⑧
C506
C505
C504
L501
T501
D503
R510
C509
W501
C503
Q502
R508
Q504
R511
R513
RV504
R521
C513
R524
R525
R503
C502
C515
R509
⑥
CN502
C516
R523
C511
C507
L503
R512
R514
C510
C508
1-639-727-
22


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
JK-99
(Video/Audio Jack)
VC-147
(Camera, Lens Drive)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier, Video, Servo, System Control)

DD-67 (POWER), SW-223 (STANDBY, START/STOP SWITCH) PRINTED WIRING BOARDS

— Ref. No. DD-67 BOARD: 1000 series, SW-223 BOARD: 7000 series —



DD-67 BOARD (COMPONENT SIDE)

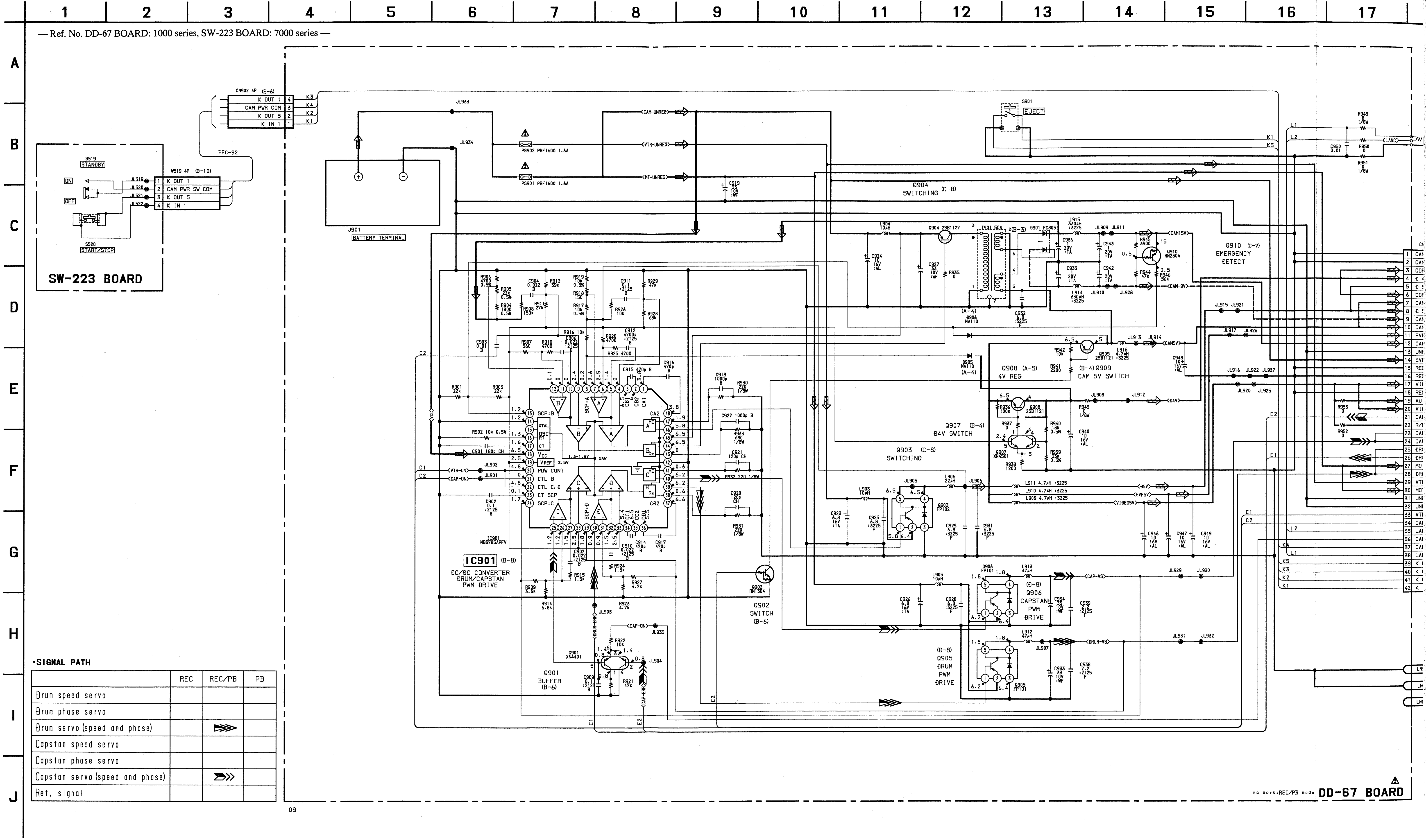
DD-67 BOARD (CONDUCTOR SIDE)

SW-223 BOARD (CONDUCTOR SIDE)

A
B
C
D
E
F
G
S901
EJECT
R949
R951
L915
L914
C932
C927
L904
T901
L906
C924
L903
L912
C933
L905
L913
C934
PS901
PS902
C919
J901
BATTERY TERMINAL
1-652-194-
21
IC901
J902
REMOTE
LN902
C904
C926
C928
CN902
LN903
1-652-194-
21
S519
STANDBY
S520
START/STOP
1-647-998-
13
W519
09
1
2
3
4
5
6
7
8
9
10
11

DD-67 (POWER), SW-223 (STANDBY, START/STOP SWITCH) SCHEMATIC DIAGRAM

— Ref. No. DD-67 BOARD: 1000 series, SW-223 BOARD: 7000 series —


1
2
3
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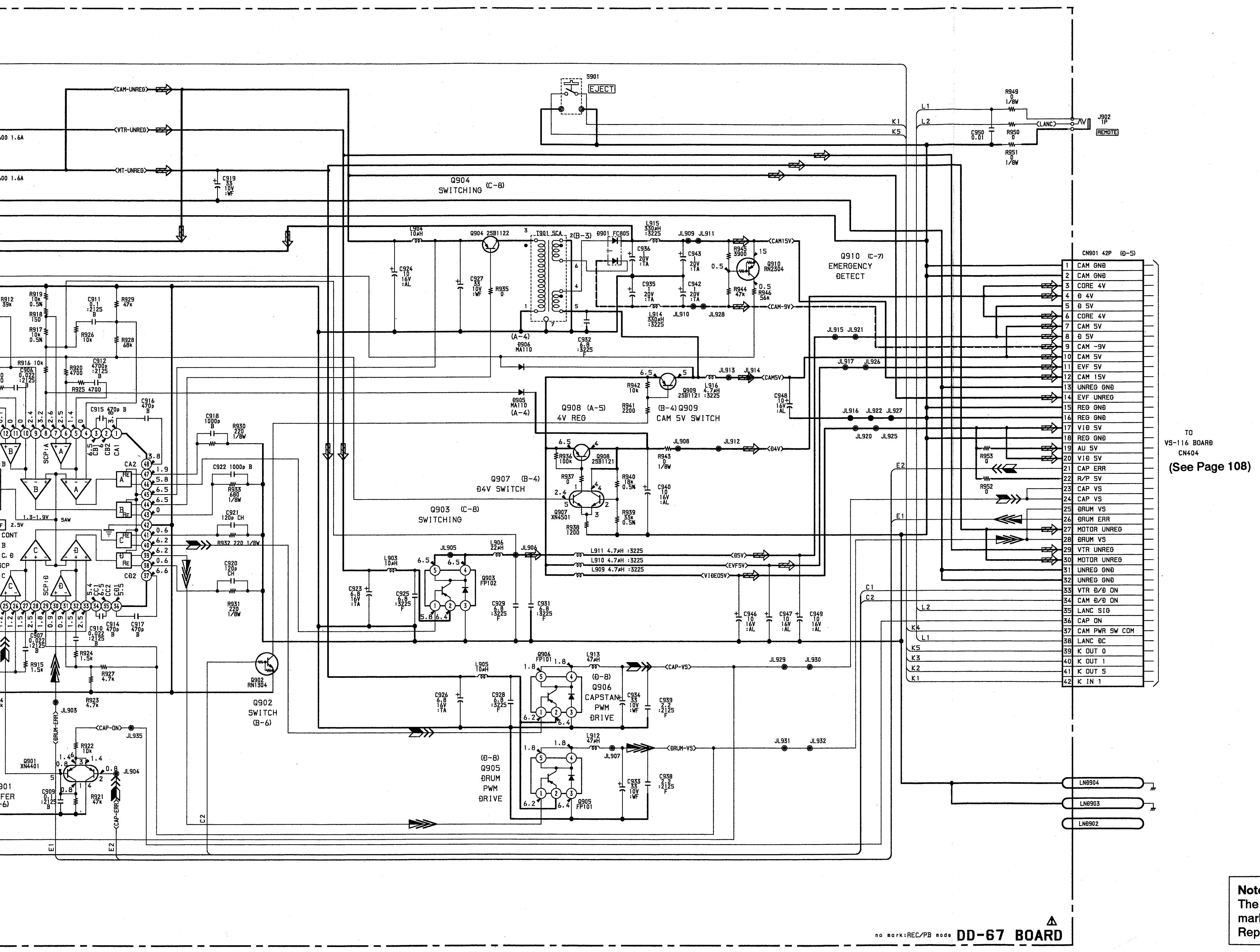
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
SW-223 BOARD
S519 STANDBY
ON
OFF
S520 START/STOP
W519 4P (D-10)
K OUT 1
CAM PWR SW COM
K OUT 5
K IN 1
FFC-92
CN902 4P (E-6)
J901 BATTERY TERMINAL
PS902 PRF1600 1.6A
PS901 PRF1600 1.6A
CAM-UNREG
VTR-UNREG
MT-UNREG
Q904 SWITCHING (C-8)
Q904 2SB1122
T901 SCA
D901 FC805
Q910 (C-7) EMERGENCY DETECT
Q910 RN2304
CAM15V
CAM-9V
D906 MA110
Q908 (A-5) 4V REG
Q909 2SB1121
(B-4) Q909 CAM 5V SWITCH
CAM5V
D905 MA110
Q907 (B-4) D4V SWITCH
Q907 XN4501
Q908 2SB1121
D4V
Q903 (C-8) SWITCHING
Q903 FP102
D5V
EVF5V
VIDEO5V
IC901 (B-8)
DC/DC CONVERTER DRUM/CAPSTAN PWM DRIVE
IC901 MB3785APFV
Q902 RN1304
Q902 SWITCH (B-6)
Q901 XN4401
Q901 BUFFER (B-6)
CAP-ON
DRUM-ERR
CAP-ERR
VTR-ON
CAM-ON
Q906 FP101
(B-8) Q906 CAPSTAN PWM DRIVE
CAP-VS
Q905 FP101
(B-8) Q905 DRUM PWM DRIVE
DRUM-VS
S901 EJECT
LANC
no mark:REC/PB mode
DD-67 BOARD
09

·SIGNAL PATH

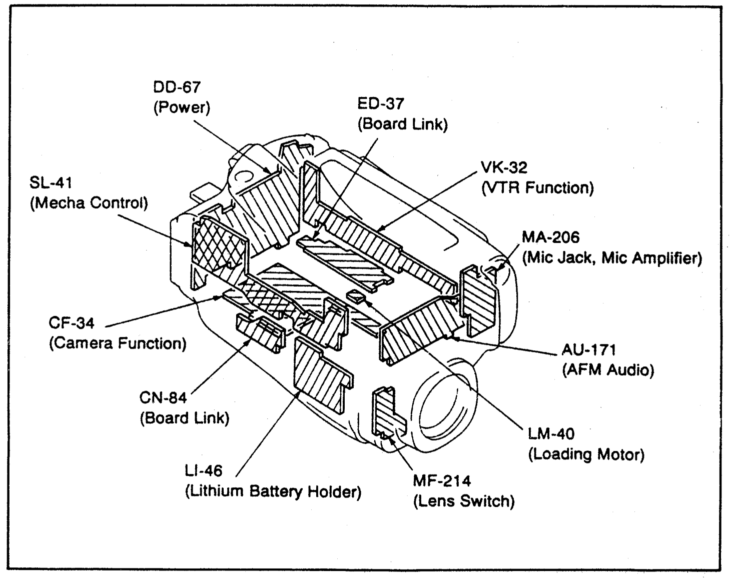
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⋙	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⋙	
Ref. signal			

7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19


S901
EJECT
J902
LANC
REMOTE
Q904
SWITCHING (C-8)
Q904 2SB1122
T901 SCA
D901 FC805
Q910 (C-7)
EMERGENCY
DETECT
Q910 RN2304
CAM15V
CAM-9V
CAM5V
D4V
D5V
EVF5V
VIDEO5V
CAM-UNREG
VTR-UNREG
MT-UNREG
(A-4)
D906
MA110
D905
MA110
(A-4)
Q908 (A-5)
4V REG
Q908
2SB1121
(B-4) Q909
CAM 5V SWITCH
Q909
2SB1121
Q907 (B-4)
D4V SWITCH
Q907
XN4501
Q903 (C-8)
SWITCHING
Q903
FP102
Q902
RN1304
Q902
SWITCH
(B-6)
Q901
XN4401
(D-8)
Q906
CAPSTAN
PWM
DRIVE
Q906
FP101
(D-8)
Q905
DRUM
PWM
DRIVE
Q905
FP101
CAP-VS
DRUM-VS
CAP-ON
DRUM-ERR
CAP-ERR
CN901 42P (D-5)
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VID 5V
18 REG GND
19 AU 5V
20 VID 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39 K OUT 0
40 K OUT 1
41 K OUT 5
42 K IN 1
TO
VS-116 BOARD
CN404
LND904
LND903
LND902
no mark:REC/PB mode

(See Page 108)

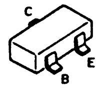
DD-67 BOARD


DD-67
(Power)
ED-37
(Board Link)
SL-41
(Mecha Control)
VK-32
(VTR Function)
MA-206
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-171
(AFM Audio)
CN-84
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

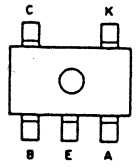
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

4-3. SEMICONDUCTORS

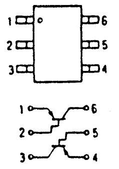
DTA114EE
DTC124EE
RN1302
RN2302
UN511E
UN5112
UN5113
UN5115
UN521E
UN5212
UN5213
UN9111
2SA1162
2SA1163-G
2SA1576-R
2SA1586
2SA1622-5.6.7
2SA1774R
2SB1202FAST
2SB1295-UL6
2SB1462Q
2SB1574
2SC1623
2SC2223-F13
2SC4178-F14
2SC4211-5.6.7
2SC4617
2SD1819A-R
2SD2216Q



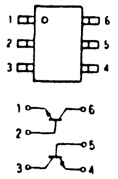
FP101
FP102



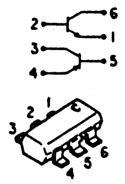
UMT1
XP4401



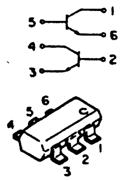
UMX1
XP4501



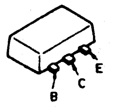
UMZ1
XN4312



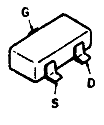
XN4213
XN4215
XN4501



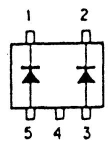
2SB1121
2SB1122-S
2SB798-DL
2SD1615A-GP



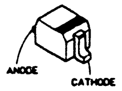
2SK1875



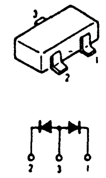
FC805



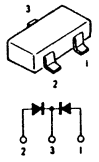
MA110
1SS332


ANODE
CATHODE

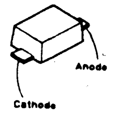
MA142WA
MA152WA
1SS181



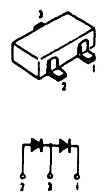
MA142WK



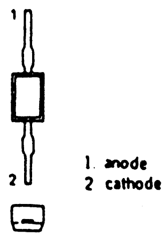
MA728
MA8082


Anode
Cathode

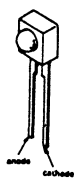
1SS123
1SS226



TLS221


1
2
1. anode
2. cathode

BR4371F


anode
cathode

SECTION 5

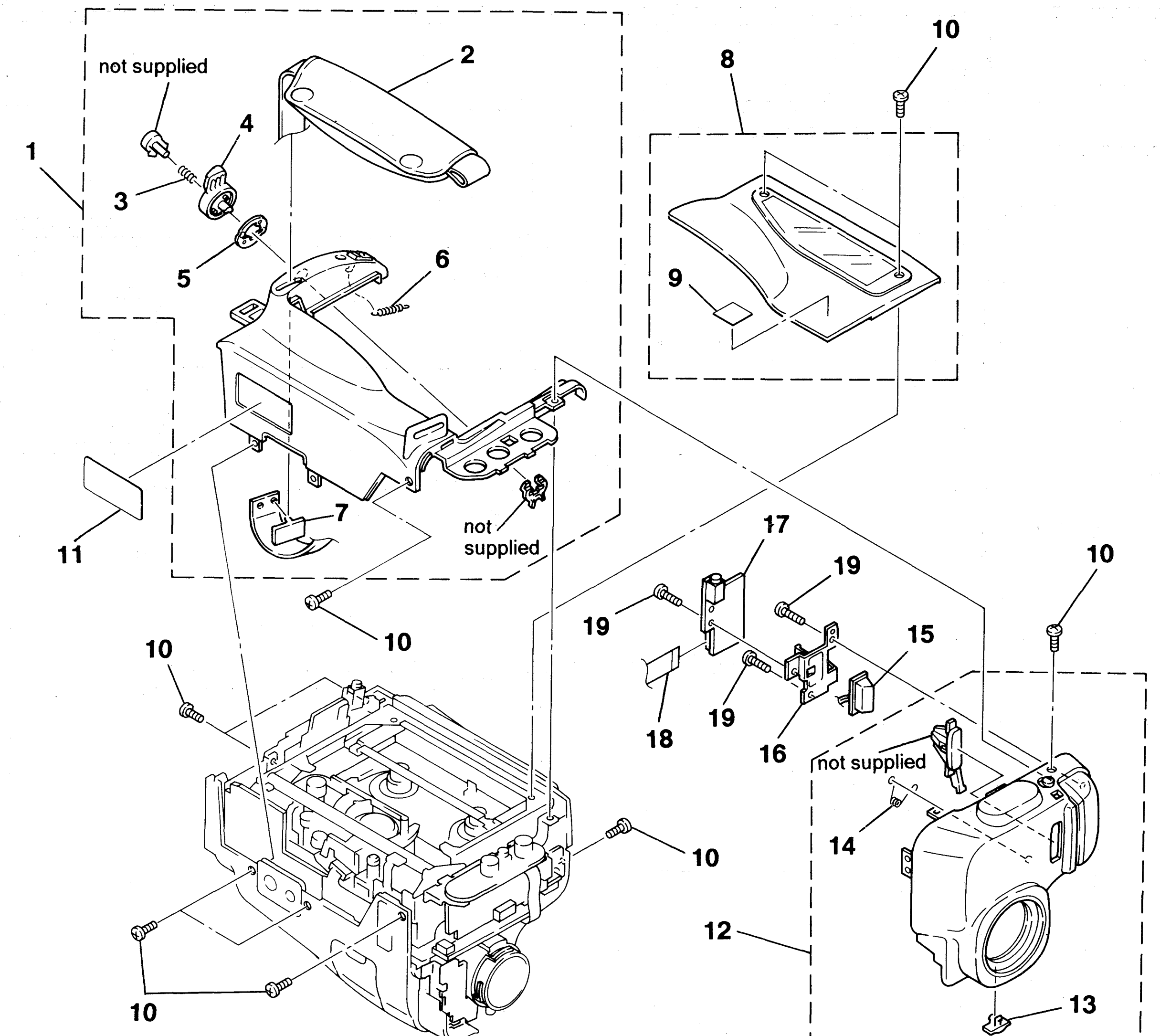
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Australian model is abbreviated as AUS.

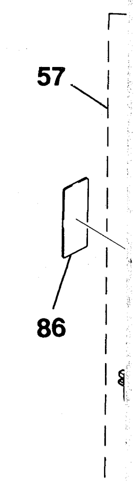
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (L) AND FRONT PANEL ASSEMBLIES


not supplied
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
not supplied
not supplied

Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY	
2	3-736-807-01	BELT, GRIP	
3	3-578-221-00	SPRING, COMPRESSION	
4	3-942-985-01	KNOB, STAND-BY	
5	3-736-364-01	SPRING	
6	4-602-490-00	SPRING, TENSION	
7	3-942-895-01	STOPPER, BELT	
8	X-3943-989-1	LID ASSY, CASSETTE	
9	3-703-710-41	STICKER, SONY SYMBOL (12)	
10	3-719-381-01	SCREW (M2X4)	
∗ 11	3-958-103-01	LABEL, MODEL NUMBER (AEP) (AEP, Russian)	
∗ 11	3-958-104-01	LABEL, MODEL NUMBER (UK) (UK, E, AUS, Tourist)	
12	X-3943-990-1	PANEL ASSY, FRONT	
13	3-942-905-01	KNOB, S	
14	3-947-357-01	SPRING, TORSION	
15	A-7091-800-A	MICROPHONE UNIT	
∗ 16	3-949-000-01	RETAINER, MICROPHONE	
∗ 17	A-7063-979-A	MA-206PLL BOARD, COMPLETE	
18	1-696-487-11	CABLE, FLAT (FFC-90)	
19	3-713-790-21	SCREW (M2X6), TAPPING, P3	

5-2. CAB



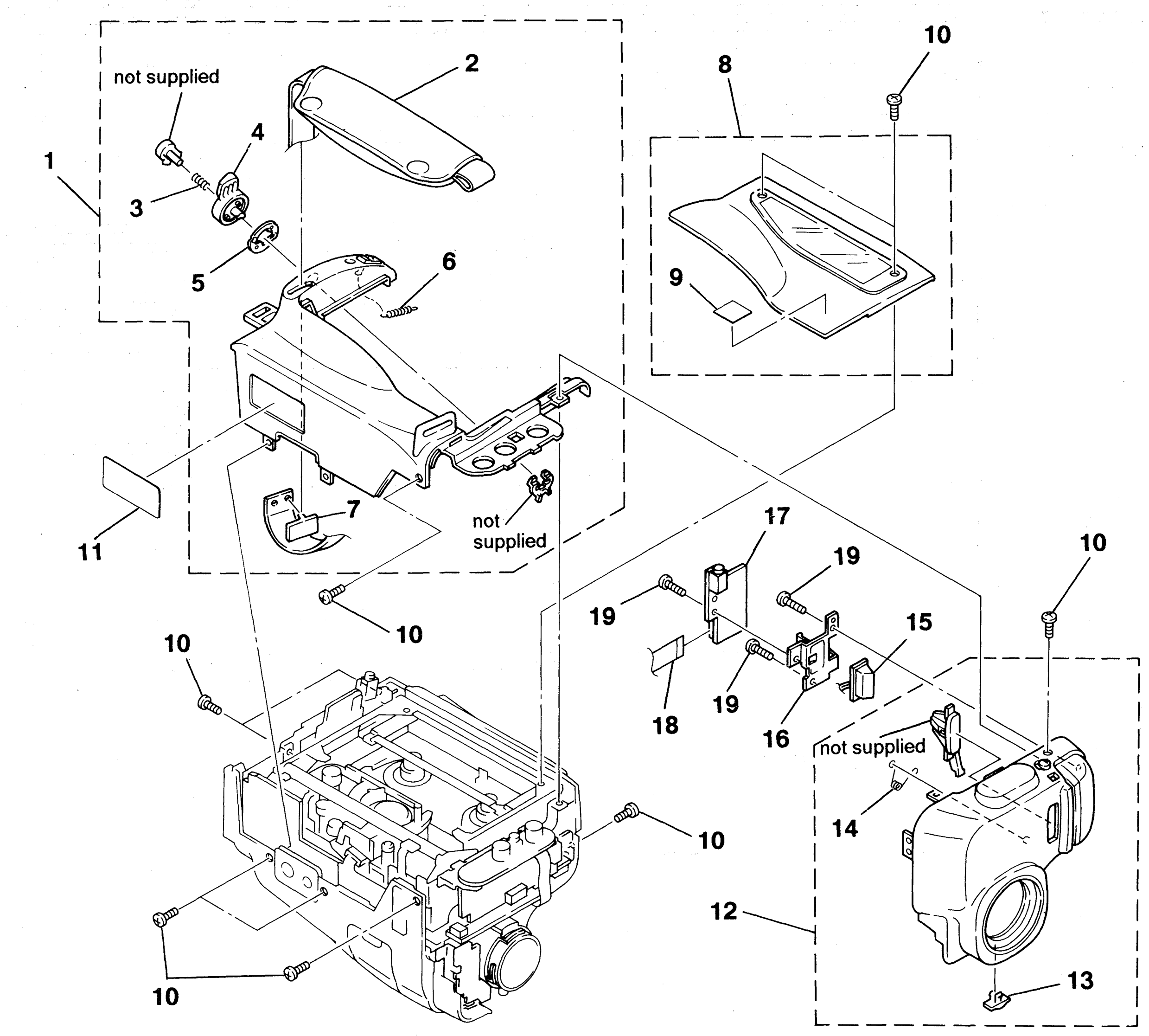
Ref. No.	Part
∗ 51	A-707
∗ 52	A-707
∗ 53	A-707
∗ 54	A-707
55	3-713
56	3-740
57	X-394
58	3-942
59	3-948
60	3-948
61	4-908
62	3-948
63	3-719
64	3-948
65	3-747
66	3-948
67	3-747
68	3-747
69	3-747
70	3-747
71	3-949

SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Australian model is abbreviated as AUS.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

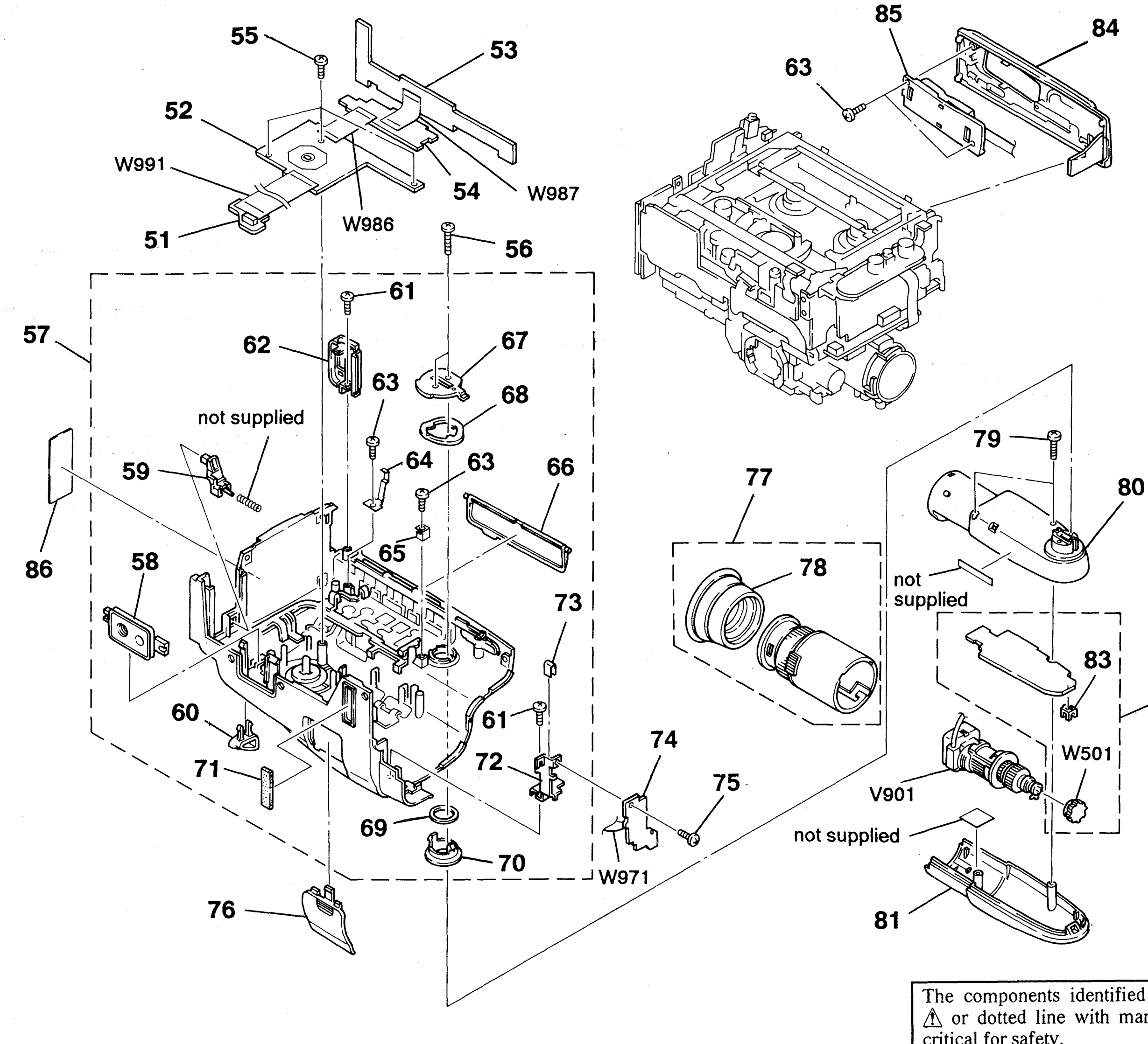
5-1. CABINET (L) AND FRONT PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY	
2	3-736-807-01	BELT, GRIP	
3	3-578-221-00	SPRING, COMPRESSION	
4	3-942-985-01	KNOB, STAND-BY	
5	3-736-364-01	SPRING	
6	4-602-490-00	SPRING, TENSION	
7	3-942-895-01	STOPPER, BELT	
8	X-3943-989-1	LID ASSY, CASSETTE	
9	3-703-710-41	STICKER, SONY SYMBOL (12)	
10	3-719-381-01	SCREW (M2X4)	

Ref. No.	Part No.	Description	Remark
∗ 11	3-958-103-01	LABEL, MODEL NUMBER (AEP)(AEP, Russian)	
∗ 11	3-958-104-01	LABEL, MODEL NUMBER (UK)(UK, E, AUS, Tourist)	
12	X-3943-990-1	PANEL ASSY, FRONT	
13	3-942-905-01	KNOB, S	
14	3-947-357-01	SPRING, TORSION	
15	A-7091-800-A	MICROPHONE UNIT	
∗ 16	3-949-000-01	RETAINER, MICROPHONE	
∗ 17	A-7063-979-A	MA-206PLL BOARD, COMPLETE	
18	1-696-487-11	CABLE, FLAT (FFC-90)	
19	3-713-790-21	SCREW (M2X6), TAPPING, P3	

5-2. CABINET (R) AND EVF ASSEMBLIES

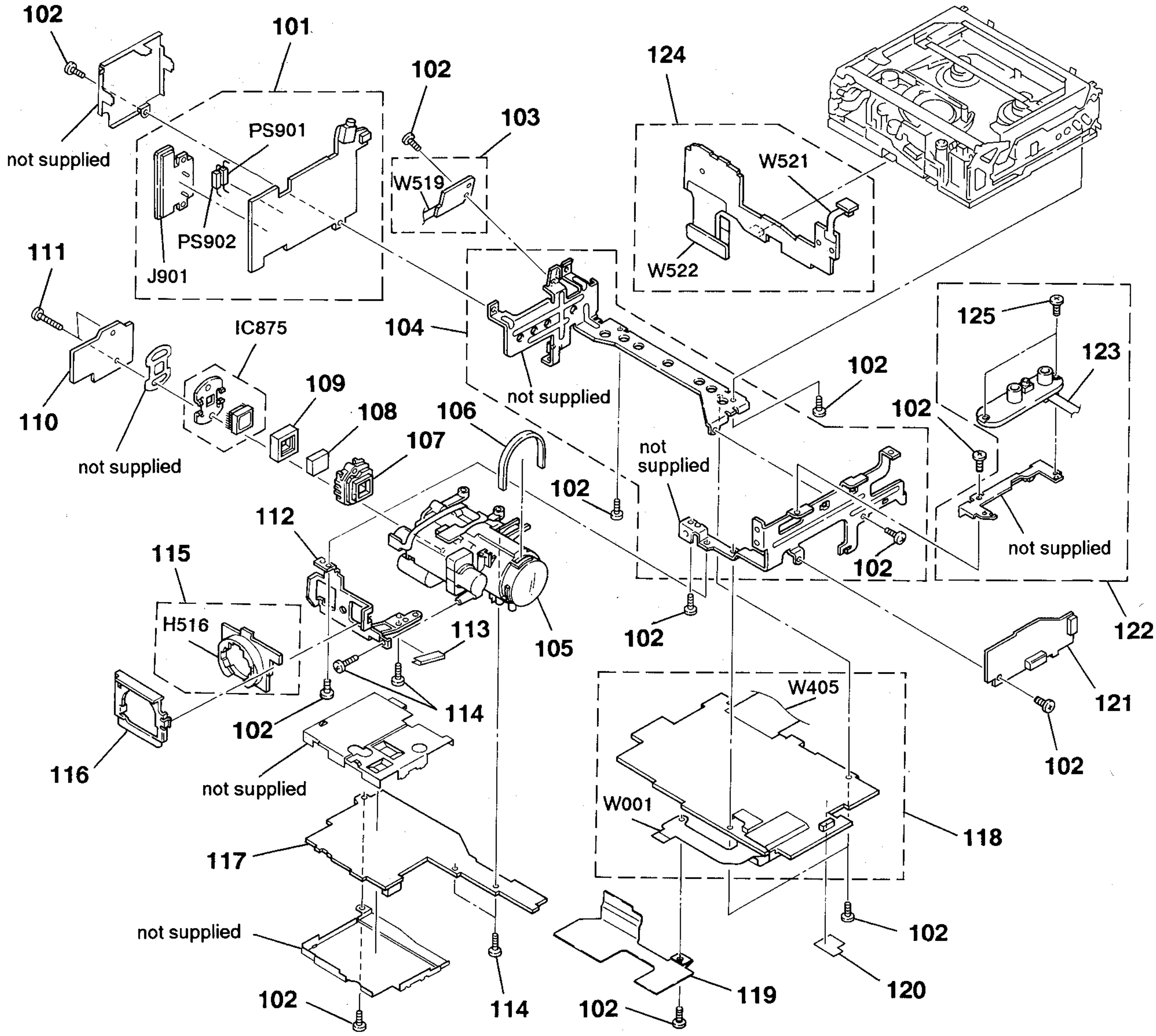


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
∗ 51	A-7072-008-A	CN-84PLL BOARD, COMPLETE	
∗ 52	A-7072-012-A	CF-34PLL BOARD, COMPLETE	
∗ 53	A-7072-010-A	VK-32LL BOARD, COMPLETE	
∗ 54	A-7072-013-A	ED-37PLL BOARD, COMPLETE	
55	3-713-790-21	SCREW (M2X6), TAPPING, P3	
56	3-740-546-41	SCREW (M2X10)	
57	X-3943-991-1	CABINET (R) ASSY	
58	3-942-911-01	SCREW, TRIPOD	
59	3-948-990-01	LOCK, BATTERY	
60	3-948-989-01	KNOB, BATTERY	
61	4-908-792-71	SCREW (B2X6), TAPPING, P1	
62	3-948-975-51	BASE, POWER	
63	3-719-601-01	SCREW (B2X5), TAPPING	
64	3-948-988-01	SPRING, LEAF, VK	
65	3-747-178-01	REINFORCEMENT, TILT LOCK	
66	3-948-976-01	DOOR, CONTROL	
67	3-747-111-01	PLATE, LOCK, TILT	
68	3-747-110-01	SPRING, LEAF, TILT	
69	3-747-112-01	RING, TILT	
70	3-747-109-01	SLEEVE, EVF	
71	3-949-008-01	SHEET, FOOT	

Ref. No.	Part No.	Description	Remark
∗ 72	3-948-987-01	FRAME, MF	
73	2-532-810-00	CUSHION, 15X5X0.3	
∗ 74	A-7072-009-A	MF-214W BOARD, COMPLETE	
75	3-713-786-21	SCREW (M2X3)	
76	3-948-843-01	LID, BATTERY CASE, LITHIUM	
77	X-3941-603-1	HOLDER ASSY, FINDER	
78	3-946-426-01	EYE CUP	
79	3-713-790-31	SCREW (M2X8), TAPPING, P3	
80	X-3940-706-1	CABINET (L) ASSY, EVF	
81	3-943-077-01	CABINET (R), EVF	
∗ 82	A-7063-220-A	VF-42P BOARD, COMPLETE	
83	3-942-888-01	HOLDER, LED	
84	X-3941-894-1	LID ASSY, LS	
85	1-692-257-11	SWITCH, PUSH (ZOOM)	
∗ 86	3-704-235-01	LABEL, CAUTION (UK)	
⚠V901	1-452-565-11	CRT ASSY (M01KKD70WB)	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	
W987	1-696-622-11	FP-591 FLEXIBLE BOARD	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

5-3. MAIN BOARDS ASSEMBLY


102
101
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124
103
PS901
not supplied
W519
W521
PS902
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J901
W522
IC875
104
125
123
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109
not supplied
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106
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107
not supplied
not supplied
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112
115
not supplied
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H516
113
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122
121
114
W405
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116
not supplied
W001
118
117
not supplied
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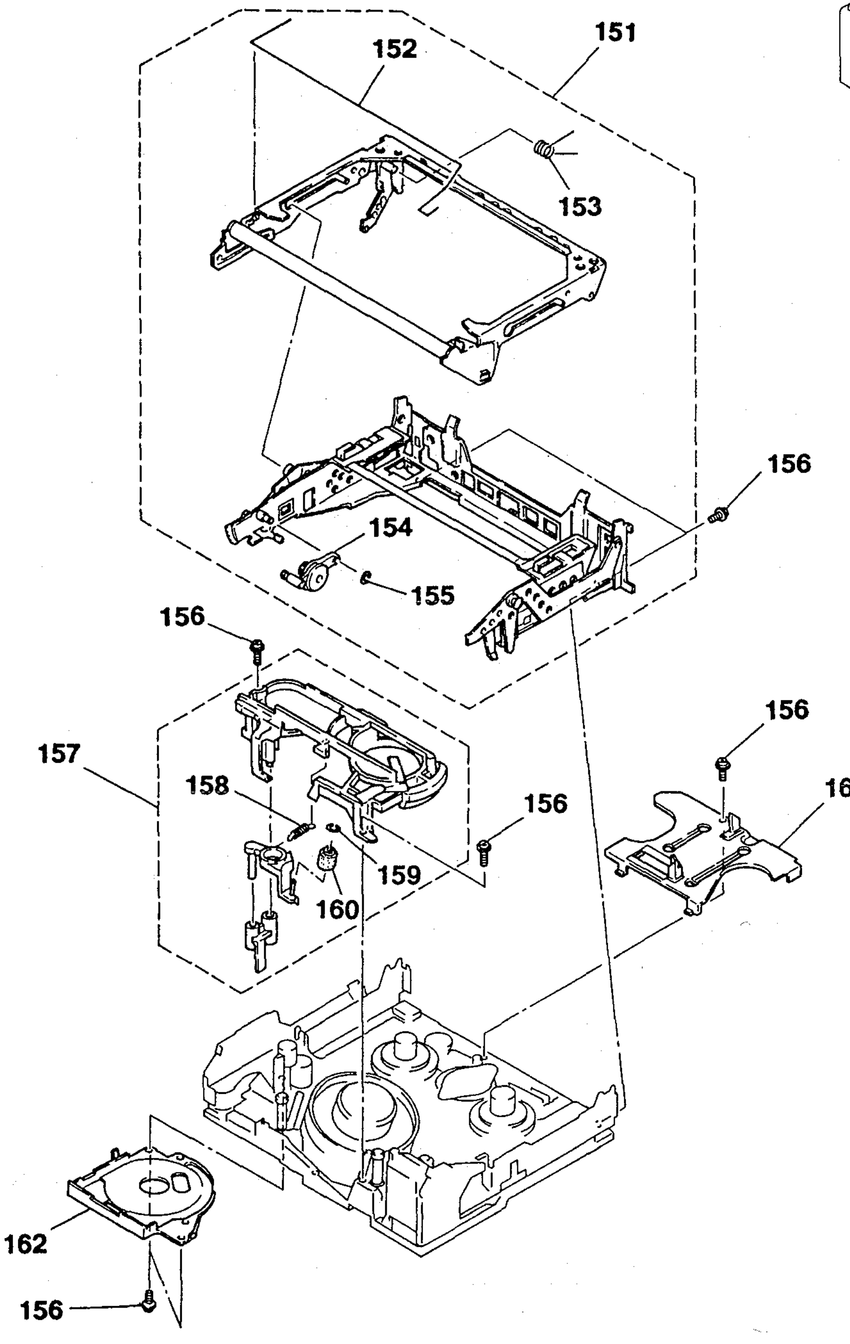
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Be sure to read "Note on the CCD Imager replacement" on page 78 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
⚠*101	A-7063-977-A	DD-67PLL BOARD, COMPLETE	
102	3-713-786-51	SCREW (M2X3)	
* 103	A-7071-828-A	SW-223 BOARD, COMPLETE	
* 104	X-3942-209-1	FRAME (UPPER LOWER) ASSY	
105	1-547-548-11	LENS, ZOOM (VCL-6210WC)(TYPE A)	
105	1-547-630-11	LENS, ZOOM (VCL-6210WF)(TYPE B)	
106	3-954-580-01	CUSHION, LENS	
107	3-946-856-01	ADAPTOR (H), CCD FITTING	
108	1-547-558-21	FILTER BLOCK, OPTICAL	
109	3-946-857-01	RUBBER (S), SEAL	
* 110	A-7063-973-A	CD-116PLL BOARD, COMPLETE	
111	3-947-268-01	SCREW (B TIGHT) (2), TAPPING	
* 112	3-949-001-01	FRAME, LENS	
113	3-846-312-01	SPACER	
114	3-719-601-01	SCREW (B2X5), TAPPING	
* 115	A-7071-829-A	LI-46 BOARD, COMPLETE	
116	3-948-842-01	HOLDER, LI	
* 117	A-7063-975-A	VC-147PLL BOARD, COMPLETE	
* 118	A-7063-974-A	VS-116PLL BOARD, COMPLETE	
119	3-957-512-01	SHIELD, SL	
* 120	3-954-411-01	SHEET (VS/LE), INSULATING	
* 121	A-7063-978-A	AU-171PLL BOARD, COMPLETE	
* 122	A-7066-021-A	JK-99LL BOARD, COMPLETE	
123	1-751-814-11	CABLE, FLAT (FFC-124)	
* 124	A-7063-976-A	SL-41PLL BOARD, COMPLETE	
125	3-719-381-01	SCREW (M2X4)	
H516	1-550-104-32	HOLDER, BATTERY	
J901	1-537-281-41	TERMINAL BOARD	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	
IC875	A-7030-369-A	CCD BLOCK ASSY (ICX055AK-1)(CCD IMAGER)	
⚠PS901	1-532-841-21	LINK, IC (1.6A PRF1600)	
⚠PS902	1-532-841-21	LINK, IC (1.6A PRF1600)	

5-4. CASSETTE COMPARTMENT ASSEMBLY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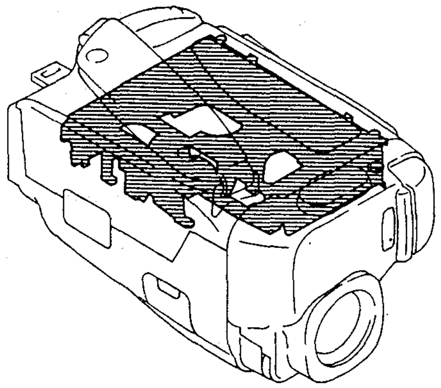
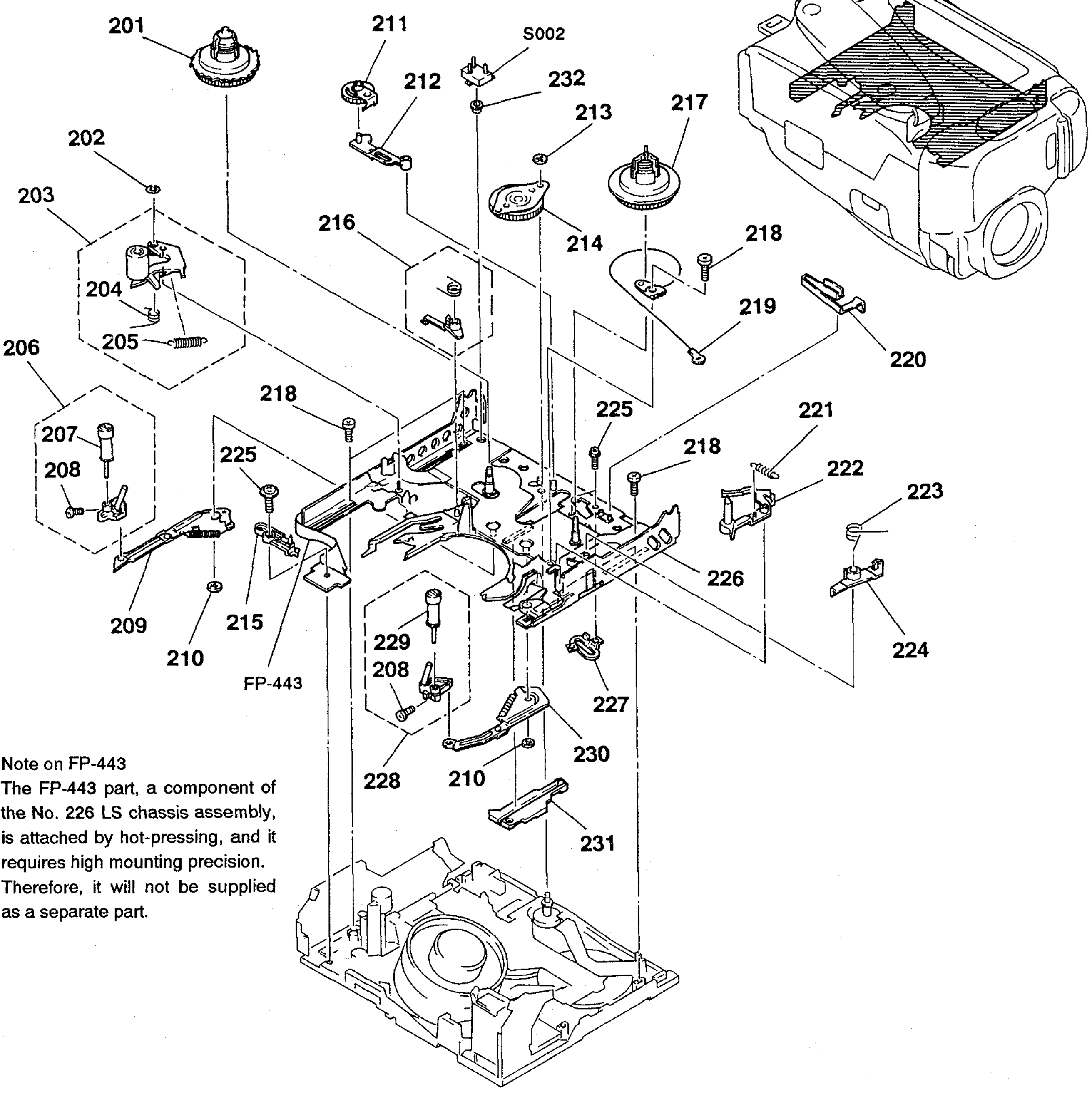


Ref. No.	Part No.	Description	Remark
151	A-7040-312-K	CASSETTE COMPARTMENT BLOCK ASSY	
152	3-945-773-01	BAR, TORSION	
153	3-945-771-01	SPRING, TORSION	
154	X-3941-287-2	DAMPER ASSY	
155	3-315-384-31	WASHER, STOPPER	
156	3-947-503-01	SCREW (M1.4X2.5)	
157	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
158	3-945-760-01	SPRING, TENSION	
159	3-321-393-01	WASHER, STOPPER	
160	X-3166-813-1	ROLLER ASSY, HC	
161	X-3941-280-1	RETAINER ASSY, GOOSENECK	
162	3-945-733-01	COVER, CAPSTAN	

5-5. LS CHASSIS ASSEMBLY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S002
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FP-443
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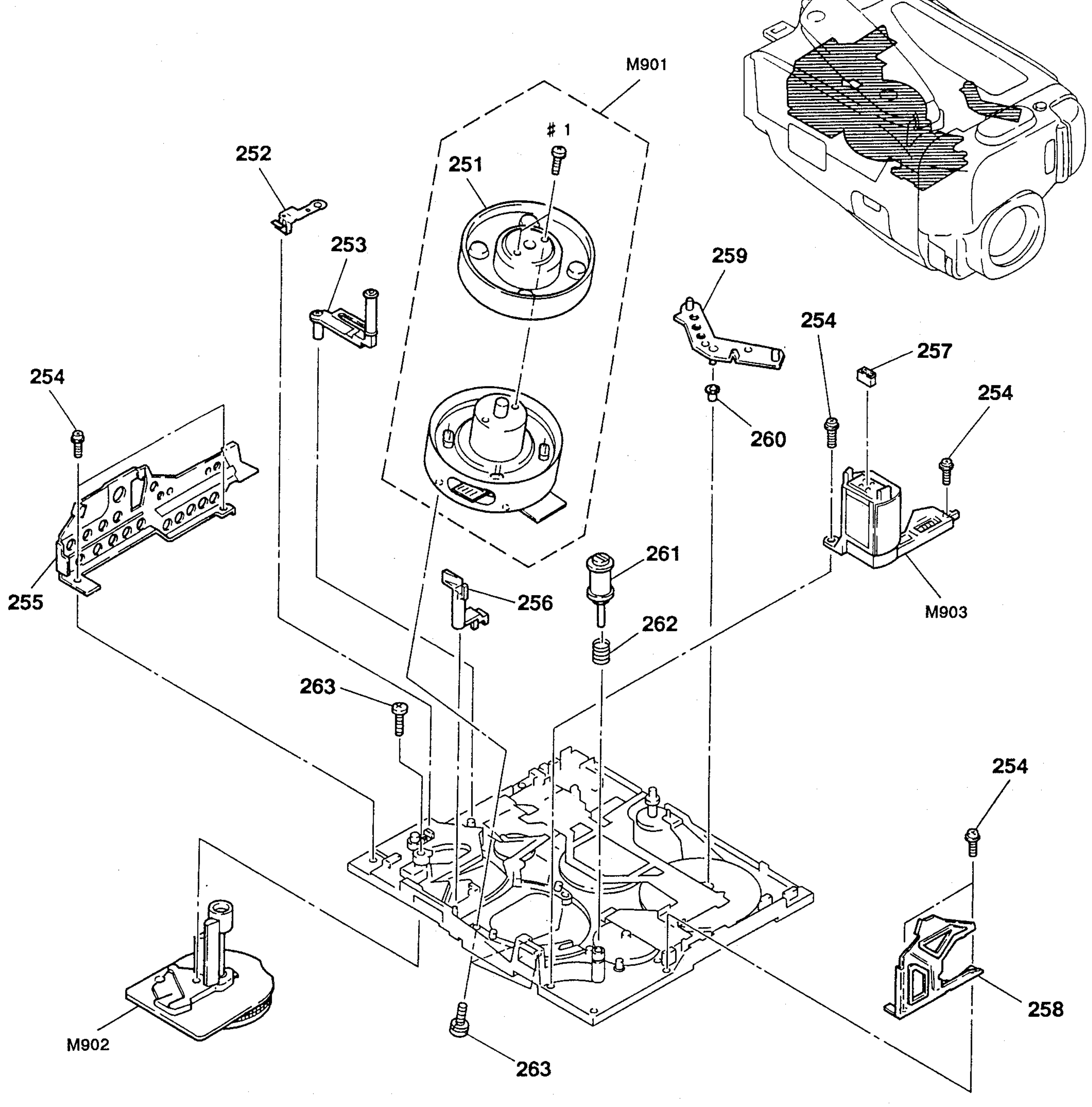
Note on FP-443
The FP-443 part, a component of the No. 226 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision. Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark
201	X-3941-274-1	TABLE ASSY, REEL, T	
202	3-331-007-21	WASHER	
203	X-3941-271-5	ARM ASSY, PINCH	
204	3-945-743-01	SPRING, TORSION	
205	3-945-783-01	SPRING, TENSION	
206	A-7040-307-A	GUIDE (BASE) (T) BLOCK ASSY	
207	X-3941-424-1	ROLLER ASSY, TG6	
208	3-947-504-01	SCREW (M1.2X2)	
209	X-3941-267-1	ARM (T) ASSY, GUIDE	
210	3-669-465-00	WASHER (1.5), STOPPER	
211	X-3941-273-1	SOFT ASSY, T	
212	3-945-753-01	ARM, T SOFT	
213	3-726-829-01	WASHER, STOPPER	
214	X-3941-279-5	GEAR ASSY, GOOSENECK	
215	3-947-644-01	RETAINER, TG5 (BASE)	
216	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
217	X-3943-676-1	TABLE ASSY, REEL, S	
218	3-945-756-01	SCREW (M1.4X3)	
219	X-3941-277-1	STRING BLOCK ASSY	
220	3-945-801-01	BRAKE, S SOFT	
221	3-954-327-01	SPRING, TENSION	
222	X-3941-276-1	TG1 ASSY	
223	3-945-752-01	SPRING, TORSION	
224	3-945-799-01	BRAKE, S HARD	
225	3-947-503-01	SCREW (M1.4X2.5)	
226	X-3943-307-1	CHASSIS ASSY, LS	
227	3-945-784-01	PLATE, CAM, LS	
228	A-7040-306-A	GUIDE (BASE) (S) BLOCK ASSY	
229	X-3941-269-1	ROLLER ASSY, TG3	
230	X-3941-266-1	ARM (S) ASSY, GUIDE	
231	3-945-837-01	SLIDER, GL	
232	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)


M901
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M903
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M902
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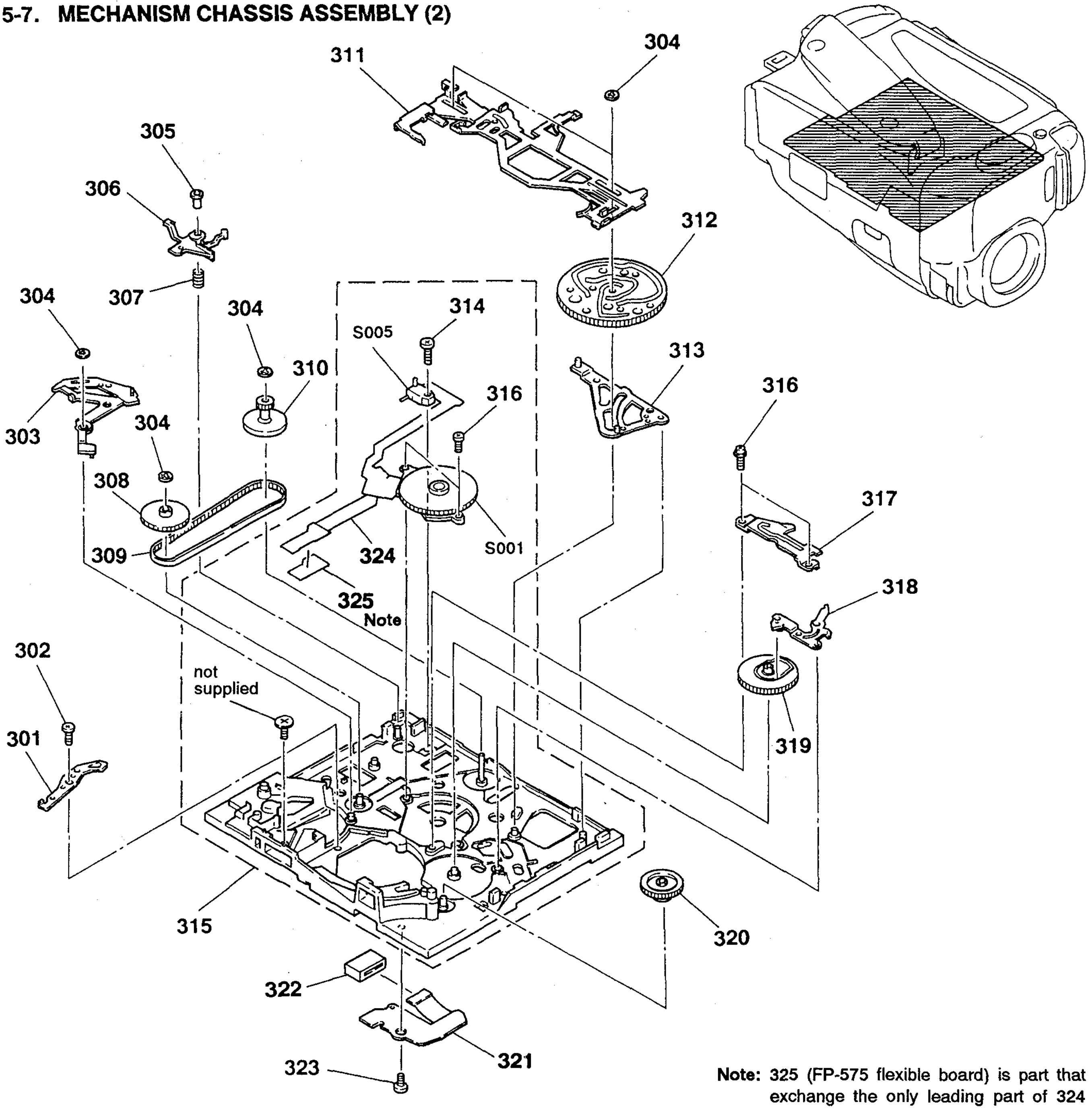
Ref. No.	Part No.	Description	Remark
251	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R)	
252	3-945-822-01	SPRING, LEAF, TG7 ARM	
253	A-7040-305-A	ARM BLOCK ASSY, TG7	
254	3-947-503-01	SCREW (M1.4X2.5)	
255	X-3941-255-1	PLATE (T) ASSY, SIDE	
256	3-945-735-01	ARM, HC CONVERSION	
257	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
258	3-945-691-01	PLATE (S), SIDE	
259	3-945-701-01	ARM, LS	

Ref. No.	Part No.	Description	Remark
260	3-945-702-01	ROLLER, LS	
261	X-3941-262-1	ROLLER ASSY, TG2	
262	3-956-651-01	SPRING, COMPRESSION	
263	3-686-493-01	SCREW (M2X5), P1	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)


311
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307
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314
S005
310
313
316
316
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304
308
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324
S001
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Note
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302
not
supplied
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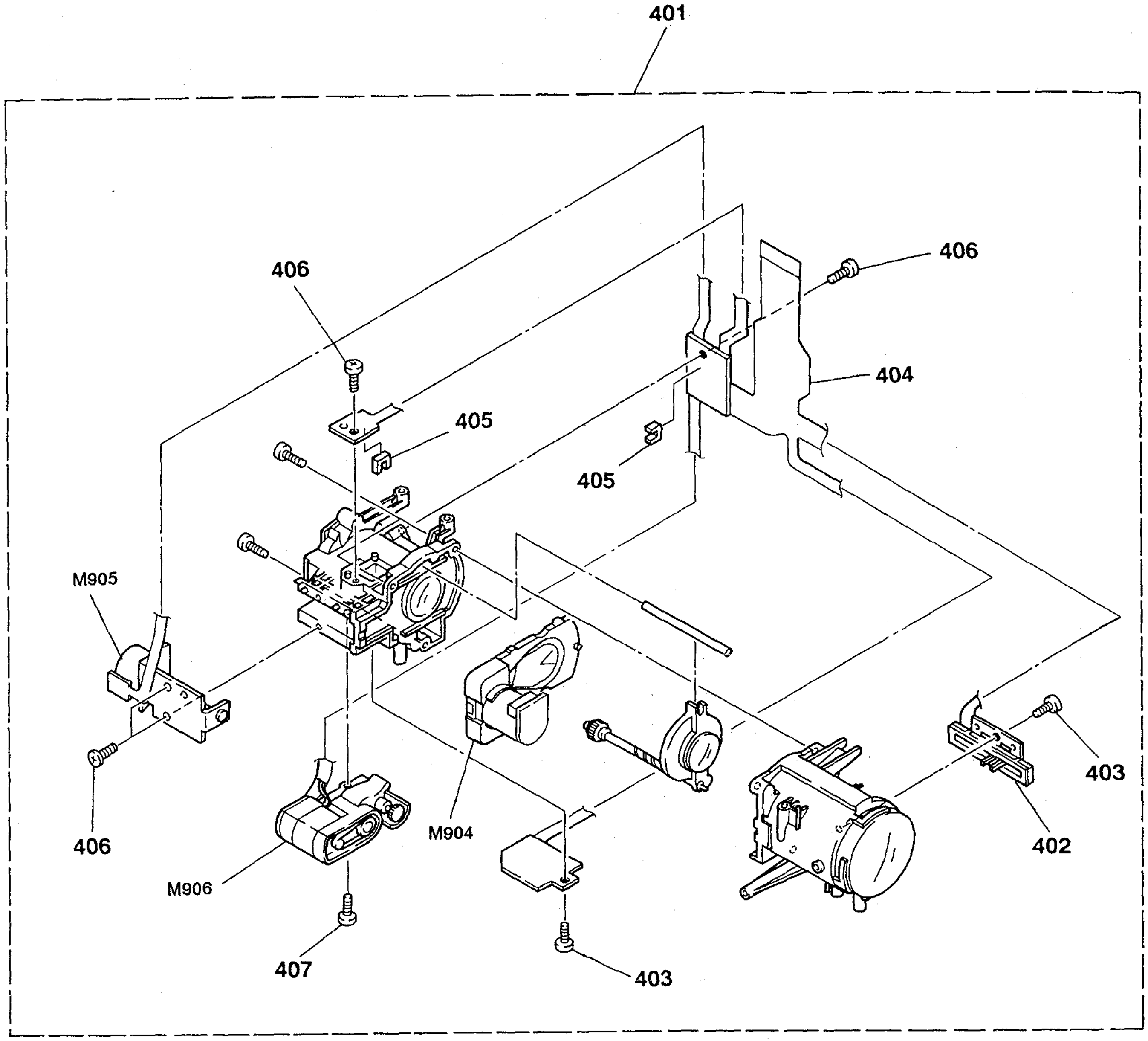
Note: 325 (FP-575 flexible board) is part that exchange the only leading part of 324 (FP-442 flexible board).

Ref. No.	Part No.	Description	Remark
301	3-945-734-01	ARM, HC DRIVING	
302	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
303	X-3941-259-1	ARM ASSY, PINCH PRESS	
304	3-726-829-01	WASHER, STOPPER	
305	3-945-730-01	SLEEVE, EJECT	
306	3-945-706-01	LEVER, EJECT	
307	3-945-729-01	SPRING, COMPRESSION	
308	X-3941-256-1	GEAR ASSY, CHANGE	
309	3-944-539-01	BELT, RELAY	
310	3-945-695-01	PULLEY, RELAY	
311	X-3941-260-1	SLIDER ASSY, M	
312	3-945-696-02	CAM	
313	X-3941-258-1	ARM ASSY, GL	
314	3-713-786-71	SCREW (M2X5)	
315	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
316	3-947-503-01	SCREW (M1.4X2.5)	
317	3-945-722-01	RETAINER, GEAR	
318	X-3941-257-1	ARM ASSY, FF	
319	3-945-697-01	GEAR (B), L	
320	3-945-700-01	GEAR (A), L	
321	1-641-643-12	FP-444 FLEXIBLE BOARD	
322	1-691-254-13	CONNECTOR, TRANSLATION 10P	
323	3-945-756-01	SCREW (M1.4X3)	
324	1-641-639-13	FP-442 FLEXIBLE BOARD	
325	1-645-271-11	FP-575 FLEXIBLE BOARD	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

5-8. ZOOM LENS ASSEMBLY (VCL-6210WC) (TYPE A)


401
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M905
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402
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M904
M906
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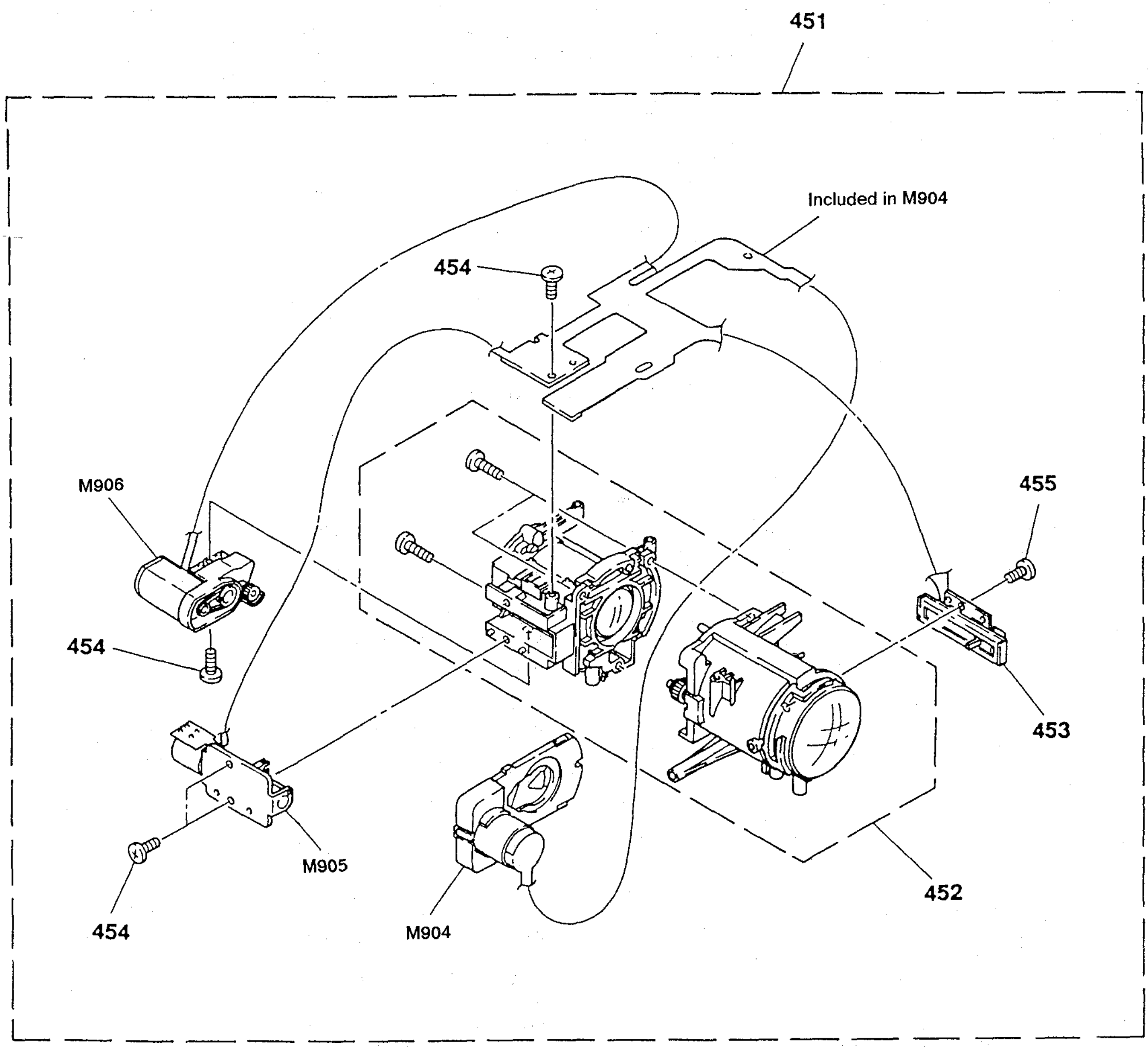
403

Ref. No.	Part No.	Description	Remark
401	1-547-548-11	LENS, ZOOM (VCL-6210WC)(TYPE A)	
402	3-708-446-01	METER, POTENTIAL	
403	3-708-053-01	SCREW, FB FITTING	
404	3-708-493-11	FLEXIBLE	
405	3-708-435-01	PHOTO INTERRUPTER	
406	3-707-946-01	SCREW	
407	3-708-450-01	SCREW, PZ	
M904	3-708-494-11	METER ASSY, IG (IRIS)(TYPE A)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)(TYPE A)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)(TYPE A)	

5-9. ZOOM LENS ASSEMBLY (VCL-6210WF) (TYPE B)


451
Included in M904
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M906
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454
453
M905
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M904

Ref. No.	Part No.	Description	Remark
451	1-547-630-11	LENS, ZOOM (VCL-6210WF)(TYPE B)	
452	3-708-652-01	LENS ASSY	
453	3-708-655-01	POTENTIO, ZOOM	
454	3-708-302-01	SCREW, FITTING M.E	
455	3-708-657-01	SCREW, POTENTIOMETER FITTING	

Ref. No.	Part No.	Description	Remark
M904	3-708-653-01	IRIS UNIT (TYPE B)	
M905	3-708-656-01	MOTOR UNIT, FOCUS (TYPE B)	
M906	3-708-654-01	MOTOR UNIT, ZOOM (TYPE B)	

AU-171 **CD-116**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Australian model is abbreviated as AUS.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description	Remark
*	A-7063-978-A	AU-171 BOARD, COMPLETE	
		**********************	
		(Ref. No. 2,000 Series)	
		< CAPACITOR >	
C551	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C552	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C553	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C554	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C601	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C605	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C607	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C614	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C615	1-164-373-11	CERAMIC CHIP 0.033uF 25V	
C617	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C618	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C627	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C628	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C629	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C630	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C631	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C632	1-162-951-11	CERAMIC CHIP 68PF 5% 50V	
C636	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C637	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C639	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C640	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C641	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C643	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C645	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C647	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C649	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C651	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C655	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C657	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C660	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C691	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C695	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C699	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
		< CONNECTOR >	
CN601	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN602	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P	
CN604	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
		< IC >	
IC601	8-759-823-19	IC CXA1488R	
		< COIL >	
L601	1-410-384-31	INDUCTOR CHIP 18uH	
		< RESISTOR >	
R603	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R604	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R605	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R607	1-216-859-11	METAL GLAZE 1.5M 5% 1/16W	
R614	1-216-817-11	METAL CHIP 470 5% 1/16W	
R615	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R616	1-216-864-11	METAL CHIP 0 5% 1/16W	
R617	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R618	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R619	1-216-864-11	METAL CHIP 0 5% 1/16W	
R620	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R622	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R625	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R630	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R659	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R677	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R679	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R681	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R682	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R691	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R692	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R693	1-216-837-11	METAL CHIP 22K 5% 1/16W	
**			
*	A-7063-973-A	CD-116 BOARD, COMPLETE	
		**********************	
		(Ref. No. 1,000 Series)	
		< CAPACITOR >	
C875	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C876	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C877	1-128-008-11	ELECT CHIP 3.3uF 20% 35V	
C879	1-162-637-11	CERAMIC CHIP 0.47uF 16V	
C880	1-135-091-21	TANTAL. CHIP 1uF 20% 16V	
C881	1-128-004-11	ELECT CHIP 10uF 20% 16V	

Ref. No.	Part No.	Description			Remark
C882	1-126-607-11	ELECT CHIP	47uF	20%	4V
C883	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C884	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C888	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V

< CONNECTOR >

CN875	1-573-308-11	CONNECTOR, BOARD TO BOARD 16P

< DIODE >

D875	8-719-800-76	DIODE	1SS123
D876	8-719-404-46	DIODE	MA110
D877	8-719-820-05	DIODE	1SS181
D878	8-719-404-46	DIODE	MA110

< IC >

IC875	A-7030-369-A	CCD BLOCK ASSY (AUTO)(ICX055AK-1) (CCD IMAGER)

< COIL >

L875	1-412-064-11	INDUCTOR CHIP 100uH

< TRANSISTOR >

Q875	8-729-425-64	TRANSISTOR	2SD2216Q
Q876	8-729-427-72	TRANSISTOR	XP4501
Q877	8-729-232-86	TRANSISTOR	2SK1875

< RESISTOR >

R877	1-216-845-11	METAL CHIP	100K	5%	1/16W
R878	1-216-857-11	METAL CHIP	1M	5%	1/16W
R879	1-216-839-11	METAL CHIP	33K	5%	1/16W
R880	1-216-843-11	METAL CHIP	68K	5%	1/16W
R881	1-216-819-11	METAL CHIP	680	5%	1/16W
R882	1-216-849-11	METAL CHIP	220K	5%	1/16W
R883	1-216-835-11	METAL CHIP	15K	5%	1/16W
R884	1-216-850-11	METAL CHIP	270K	5%	1/16W
R885	1-216-833-11	METAL CHIP	10K	5%	1/16W
R886	1-216-809-11	METAL CHIP	100	5%	1/16W
R887	1-216-828-11	METAL CHIP	3.9K	5%	1/16W

****

* A-7072-012-A CF-34 BOARD, COMPLETE

****

(Ref. No. 7,000 Series)

< CONNECTOR >

CN993	1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P

< DIODE >

D992	8-719-404-46	DIODE	MA110

< RESISTOR >

R994	1-216-295-00	METAL CHIP	0	5%	1/10W
R996	1-216-295-00	METAL CHIP	0	5%	1/10W
R999	1-216-295-00	METAL CHIP	0	5%	1/10W

< SWITCH >

S993	1-692-111-11	SWITCH, KEY BOARD (DATE (+))
S995	1-692-111-11	SWITCH, KEY BOARD (COUNTER RESET)
S996	1-692-111-11	SWITCH, KEY BOARD (TIME (NEXT))
S997	1-692-024-21	SWITCH, ROTARY (POWER)

< FLEXIBLE BOARD >

W986	1-696-621-11	FP-590 FLEXIBLE BOARD

****

* A-7072-008-A CN-84 BOARD, COMPLETE

****

(Ref. No. 6,000 Series)

< CONNECTOR >

CN518	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P

< FLAT CABLE >

W991	1-696-483-11	CABLE, FLAT (FFC-86)

****

⚠ A-7063-977-A DD-67 BOARD, COMPLETE

****

(Ref. No. 1,000 Series)

< CAPACITOR >

C901	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C902	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C903	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C904	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C906	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C907	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C909	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C910	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C911	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C912	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C914	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C915	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C916	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C917	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C918	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C919	1-128-530-11	ELECT CHIP	33uF	20%	10V
C920	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C921	1-162-928-11	CERAMIC CHIP	120PF	5%	50V

Be sure to read "Precautions for Replacement of CCD Imager" on page 78 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

DD-67

Ref. No.	Part No.	Description			Remark
C922	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C923	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C924	1-128-004-11	ELECT CHIP	10uF	20%	16V
C925	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C926	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C927	1-128-530-11	ELECT CHIP	33uF	20%	10V
C928	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C929	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C931	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C932	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C933	1-128-530-11	ELECT CHIP	33uF	20%	10V
C934	1-128-530-11	ELECT CHIP	33uF	20%	10V
C935	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C936	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C938	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C939	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C940	1-128-004-11	ELECT CHIP	10uF	20%	16V
C942	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C943	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C946	1-128-004-11	ELECT CHIP	10uF	20%	16V
C947	1-128-004-11	ELECT CHIP	10uF	20%	16V
C948	1-128-004-11	ELECT CHIP	10uF	20%	16V
C949	1-128-004-11	ELECT CHIP	10uF	20%	16V
C950	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P			
CN902	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P			
		< DIODE >			
D901	8-719-981-59	DIODE FC805			
D905	8-719-404-46	DIODE MA110			
D906	8-719-404-46	DIODE MA110			
		< IC >			
IC901	8-759-060-94	IC MB3785APFV-G-BND-ER			
		< JACK >			
J901	1-537-281-41	TERMINAL BOARD (BATTERY TERMINAL)			
J902	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)			
		< COIL >			
L903	1-424-522-21	COIL, CHOKE 10uH			
L904	1-424-522-21	COIL, CHOKE 10uH			
L905	1-424-522-21	COIL, CHOKE 10uH			
L906	1-424-523-21	COIL, CHOKE 22uH			
L909	1-412-028-11	INDUCTOR CHIP 4.7uH			
L910	1-412-028-11	INDUCTOR CHIP 4.7uH			
L911	1-412-028-11	INDUCTOR CHIP 4.7uH			

Ref. No.	Part No.	Description			Remark
L912	1-424-524-21	COIL, CHOKE 47uH			
L913	1-424-524-21	COIL, CHOKE 47uH			
L914	1-412-034-11	INDUCTOR CHIP 330uH			
L915	1-412-034-11	INDUCTOR CHIP 330uH			
L916	1-412-028-11	INDUCTOR CHIP 4.7uH			
		< IC LINK >			
⚠PS901	1-532-841-21	LINK, IC (1.6A PRF1600)			
⚠PS902	1-532-841-21	LINK, IC (1.6A PRF1600)			
		< TRANSISTOR >			
Q901	8-729-403-27	TRANSISTOR XN4401			
Q902	8-729-402-42	TRANSISTOR UN5213			
Q903	8-729-823-84	TRANSISTOR FP102			
Q904	8-729-804-41	TRANSISTOR 2SB1122-S			
Q905	8-729-823-82	TRANSISTOR FP101			
Q906	8-729-823-82	TRANSISTOR FP101			
Q907	8-729-402-81	TRANSISTOR XN4501			
Q908	8-729-805-25	TRANSISTOR 2SB1121			
Q909	8-729-805-25	TRANSISTOR 2SB1121			
Q910	8-729-403-35	TRANSISTOR UN5113			
		< RESISTOR >			
R901	1-216-837-11	METAL CHIP	22K	5%	1/16W
R902	1-218-871-11	METAL CHIP	10K	0.50%	1/16W
R903	1-216-837-11	METAL CHIP	22K	5%	1/16W
R904	1-218-853-11	METAL CHIP	1.8K	0.50%	1/16W
R905	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R906	1-218-863-11	METAL CHIP	4.7K	0.50%	1/16W
R907	1-216-818-11	METAL CHIP	560	5%	1/16W
R908	1-216-847-11	METAL CHIP	150K	5%	1/16W
R909	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R910	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R911	1-216-838-11	METAL CHIP	27K	5%	1/16W
R912	1-216-840-11	METAL CHIP	39K	5%	1/16W
R914	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R915	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R916	1-216-833-11	METAL CHIP	10K	5%	1/16W
R917	1-218-871-11	METAL CHIP	10K	0.50%	1/16W
R918	1-216-811-11	METAL CHIP	150	5%	1/16W
R919	1-218-871-11	METAL CHIP	10K	0.50%	1/16W
R920	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R921	1-216-841-11	METAL CHIP	47K	5%	1/16W
R922	1-216-833-11	METAL CHIP	10K	5%	1/16W
R923	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R924	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R925	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R926	1-216-833-11	METAL CHIP	10K	5%	1/16W
R927	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R928	1-216-843-11	METAL CHIP	68K	5%	1/16W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
R929	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R930	1-216-182-91	METAL GLAZE 220 5% 1/8W	
R931	1-216-182-91	METAL GLAZE 220 5% 1/8W	
R932	1-216-182-91	METAL GLAZE 220 5% 1/8W	
R933	1-216-194-00	METAL CHIP 680 5% 1/8W	
R935	1-216-864-11	METAL CHIP 0 5% 1/16W	
R936	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R937	1-216-864-11	METAL CHIP 0 5% 1/16W	
R938	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R939	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R940	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R941	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R942	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R943	1-216-296-00	METAL CHIP 0 5% 1/8W	
R944	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R945	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R946	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R949	1-216-296-00	METAL CHIP 0 5% 1/8W	
R950	1-216-864-11	METAL CHIP 0 5% 1/16W	
R951	1-216-296-00	METAL CHIP 0 5% 1/8W	
R952	1-216-864-11	METAL CHIP 0 5% 1/16W	
R953	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< SWITCH >	
S901	1-572-467-21	SWITCH, PUSH (1 KEY)(EJECT)	
		< TRANSFORMER >	
T901	1-450-874-21	TRANSFORMER, DC-DC CONVERTER	
***			
*	A-7072-013-A	ED-37 BOARD, COMPLETE ********************* (Ref. No. 8,000 Series)	
		< FLEXIBLE BOARD >	
W987	1-696-622-11	FP-591 FLEXIBLE BOARD	
***			
*	A-7066-021-A	JK-99 BOARD, COMPLETE ********************* (Ref. No. 3,000 Series)	
	3-884-171-00	STOPPER	
		< JACK >	
J517	1-537-649-11	TERMINAL BOARD (VIDEO/AUDIO OUT)	
		< FLAT CABLE >	
W517	1-751-814-11	CABLE, FLAT (FFC-124)	

Ref. No.	Part No.	Description	Remark
***			
*	A-7071-829-A	LI-46 BOARD, COMPLETE ********************* (Ref. No. 4,000 Series)	
		< CONNECTOR >	
* CN516	1-580-055-11	PIN, CONNECTOR 2P (LITHIUM)	
		< BATTERY HOLDER >	
H516	1-550-104-32	HOLDER, BATTERY	
***			
		LS-33 BOARD (Ref. No. 9,000 Series) ************	
		< DIODE >	
D001	8-719-989-52	DIODE GL4600S	
		< HOLE ELEMENT >	
H001	8-719-987-62	DIODE LT140SAZ	
H002	8-719-987-62	DIODE LT140SAZ	
		< TRANSISTOR >	
Q001	8-729-012-46	TRANSISTOR PT4600FS	
Q002	8-729-012-46	TRANSISTOR PT4600FS	
		< RESISTOR >	
R003	1-216-033-00	METAL CHIP 220 5% 1/10W	
R004	1-216-033-00	METAL CHIP 220 5% 1/10W	
R010	1-216-033-00	METAL CHIP 220 5% 1/10W	
R011	1-216-033-00	METAL CHIP 220 5% 1/10W	
		< SWITCH >	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MPHG)	
***			
*	A-7063-979-A	MA-206 BOARD, COMPLETE ********************* (Ref. No. 2,000 Series)	
		< CAPACITOR >	
C555	1-162-587-11	CERAMIC CHIP 0.039uF 10% 25V	
C556	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C557	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C558	1-162-638-11	CERAMIC CHIP 1uF 16V	
C562	1-162-638-11	CERAMIC CHIP 1uF 16V	
C563	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	

MA-206 MF-214 SL-41

Ref. No.	Part No.	Description	Remark
C566	1-162-638-11	CERAMIC CHIP 1uF	16V
C569	1-164-492-11	CERAMIC CHIP 0.15uF 10%	16V
		< CONNECTOR >	
CN551	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
* CN552	1-580-056-11	PIN, CONNECTOR 3P	
		< DIODE >	
D552	8-719-404-46	DIODE MA110	
		< IC >	
IC551	8-759-822-37	IC LA7293M	
		< JACK >	
J551	1-568-027-11	JACK, SMALL TYPE 1P (MIC)	
		< COIL >	
L571	1-410-192-51	INDUCTOR CHIP 1uH	
L572	1-410-192-51	INDUCTOR CHIP 1uH	
		< TRANSISTOR >	
Q551	8-729-230-60	TRANSISTOR 2SA1586	
		< RESISTOR >	
R551	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R552	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R553	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R554	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R555	1-216-864-11	METAL CHIP 0 5% 1/16W	
R556	1-216-864-11	METAL CHIP 0 5% 1/16W	
R558	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R564	1-216-295-00	METAL CHIP 0 5% 1/10W	
R565	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R566	1-216-864-11	METAL CHIP 0 5% 1/16W	

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Ref. No.	Part No.	Description	Remark
*	A-7072-009-A	MF-214 BOARD, COMPLETE ************************	
			(Ref. No. 5,000 Series)
		< DIODE >	
D971	8-719-404-46	DIODE MA110	
		< SWITCH >	
S973	1-572-467-21	SWITCH, PUSH (1 KEY)(LENS OPEN/CLOSE)	
		< FLAT CABLE >	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	

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Ref. No.	Part No.	Description	Remark
*	A-7063-976-A	SL-41 BOARD, COMPLETE **********************	
			(Ref. No. 5,000 Series)
		< CAPACITOR >	
C521	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C522	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C523	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C524	1-128-013-11	ELECT CHIP 1uF 20%	50V
C525	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C526	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V
C527	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V
		< CONNECTOR >	
CN521	1-691-482-21	CONNECTOR, FFC/FPC 15P	
CN522	1-691-472-21	CONNECTOR, FFC/FPC 6P	
CN523	1-691-473-21	CONNECTOR, FFC/FPC 7P	
		< IC >	
IC521	8-759-059-09	IC LB8111V	
		< TRANSISTOR >	
Q521	8-729-402-81	TRANSISTOR XN4501	
		< RESISTOR >	
R522	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R523	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R524	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R525	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R528	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R530	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R532	1-216-174-00	METAL GLAZE 100 5% 1/8W	
R533	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< COMPOSITION CIRCUIT BLOCK >	
RB521	1-236-424-11	NETWORK, RES 10K	
RB522	1-236-424-11	NETWORK, RES 10K	
		< FLEXIBLE BOARD >	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	

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Ref. No.	Part No.	Description			Remark
*	A-7071-828-A	SW-223 BOARD, COMPLETE ***********************			
					(Ref. No. 7,000 Series)
		< SWITCH >			
S519	1-553-977-00	SWITCH, SLIDE (STANDBY)			
S520	1-571-315-11	SWITCH, KEY BOARD (START/STOP)			
		< FLAT CABLE >			
W519	1-696-488-11	CABLE, FLAT (FFC-92)			

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Ref. No.	Part No.	Description			Remark
*	A-7063-975-A	VC-147 BOARD, COMPLETE *********************			
					(Ref. No. 3,000 Series)
		< CAPACITOR >			
C701	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C702	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C703	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C705	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C706	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C707	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C708	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C709	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C711	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C712	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C713	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C717	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C718	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C719	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C721	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C722	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C723	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C724	1-164-634-11	CERAMIC CHIP	1uF		16V
C725	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C726	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C727	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C728	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C729	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C730	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C733	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C734	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C735	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C737	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C738	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C739	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C741	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C742	1-135-091-00	TANTALUM CHIP	1uF	20%	16V

Ref. No.	Part No.	Description			Remark
C749	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C750	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C751	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C752	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C802	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C803	1-163-077-91	CERAMIC CHIP	0.1uF		50V
C804	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C806	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C807	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C808	1-135-091-21	TANTAL. CHIP	1uF	20%	16V
C809	1-163-077-91	CERAMIC CHIP	0.1uF		50V
C810	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C811	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C813	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C814	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C815	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C817	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C818	1-135-091-21	TANTAL. CHIP	1uF	20%	16V
C819	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C820	1-135-091-21	TANTAL. CHIP	1uF	20%	16V
C821	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C823	1-135-091-21	TANTAL. CHIP	1uF	20%	16V
C824	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C826	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C827	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C830	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C832	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C834	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C835	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C836	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C837	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C838	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C841	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C851	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C852	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C853	1-164-634-11	CERAMIC CHIP	1uF		16V
C854	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C855	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C856	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C857	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C858	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C859	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C860	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C861	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C862	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C863	1-162-974-11	CERAMIC CHIP	0.01uF		50V

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Ref. No.	Part No.	Description	Remark
C864	1-162-638-11	CERAMIC CHIP 1uF	16V
C866	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C868	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C869	1-164-173-11	CERAMIC CHIP 0.0039uF 10%	50V
C870	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C871	1-164-634-11	CERAMIC CHIP 1uF	16V
		< CONNECTOR >	
CN701	1-573-372-21	CONNECTOR, BOARD TO BOARD 18P	
CN801	1-573-336-11	CONNECTOR, BOARD TO BOARD 16P	
CN851	1-573-361-11	CONNECTOR, FFC/FPC 21P	
		< TRIMMER >	
CT801	1-141-356-11	CAP, ADJ 6P	
		< FILTER >	
FL701	1-236-834-21	FILTER, LOW PASS	
FL702	1-415-751-21	DELAY LINE, LC (YH)	
		< IC >	
IC701	8-759-243-19	IC TC7SU04F	
IC702	8-759-064-36	IC MB88346BPFV	
IC703	8-759-710-07	IC NJM2234M	
IC704	8-752-358-10	IC CXD2101BR	
IC705	8-759-069-18	IC CXD2103AR	
IC706	8-752-355-56	IC CXD2104BN	
IC707	8-752-347-93	IC CXD2100AQ	
IC709	8-752-840-64	IC CXP80624-434R	
IC712	8-759-159-70	IC BR9021BF	
IC801	8-752-350-16	IC CXD1257AR	
IC802	8-752-060-50	IC CXA1577R	
IC803	8-752-053-26	IC CXA1399Q	
IC804	8-752-327-48	IC CXD1250N	
IC805	8-752-054-61	IC CXA1390AR	
IC851	8-759-701-24	IC NJM3414M	
IC852	8-759-060-00	IC LM324DR	
IC853	8-759-058-47	IC MPC1724VM	
IC854	8-759-823-51	IC LB1830M	
IC856	8-759-998-98	IC LM358D	
		< COIL >	
L701	1-412-006-31	INDUCTOR CHIP 10uH	
L704	1-412-006-31	INDUCTOR CHIP 10uH	
L706	1-412-062-11	INDUCTOR CHIP 47uH	
L708	1-412-979-21	INDUCTOR 1uH	
L711	1-412-058-11	INDUCTOR CHIP 10uH	
L714	1-412-006-31	INDUCTOR CHIP 10uH	
L715	1-412-058-11	INDUCTOR CHIP 10uH	
L717	1-412-058-11	INDUCTOR CHIP 10uH	
L720	1-412-006-31	INDUCTOR CHIP 10uH	
L721	1-410-392-11	INDUCTOR CHIP 82uH	
L801	1-412-029-11	INDUCTOR CHIP 10uH	
L802	1-412-006-31	INDUCTOR CHIP 10uH	
L803	1-412-058-11	INDUCTOR CHIP 10uH	
L804	1-412-058-11	INDUCTOR CHIP 10uH	
L851	1-412-058-11	INDUCTOR CHIP 10uH	
L853	1-412-031-11	INDUCTOR CHIP 47uH	
		< TRANSISTOR >	
Q701	8-729-928-87	TRANSISTOR DTC124EE	
Q702	8-729-427-74	TRANSISTOR XP4601	
Q703	8-729-427-74	TRANSISTOR XP4601	
Q704	8-729-425-50	TRANSISTOR 2SB1462Q	
Q706	8-729-425-64	TRANSISTOR 2SD2216Q	
Q707	8-729-428-84	TRANSISTOR UN9111	
Q708	8-729-425-64	TRANSISTOR 2SD2216Q	
Q709	8-729-427-72	TRANSISTOR XP4501	
Q801	8-729-425-64	TRANSISTOR 2SD2216Q	
Q802	8-729-427-70	TRANSISTOR XP4401	
Q851	8-729-425-64	TRANSISTOR 2SD2216Q	
Q852	8-729-013-88	TRANSISTOR RN1302-TE85L	
Q853	8-729-427-70	TRANSISTOR XP4401	
		< RESISTOR >	
R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R702	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R703	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R704	1-216-815-11	METAL CHIP 330 5% 1/16W	
R705	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R706	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R707	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R708	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R709	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R710	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R711	1-216-864-11	METAL CHIP 0 5% 1/16W	
R712	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R713	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R714	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R715	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R716	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R718	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R719	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R721	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R722	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R723	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R724	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R725	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R727	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R728	1-216-864-11	METAL CHIP 0 5% 1/16W	

Ref. No.	Part No.	Description				Remark
R729	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R730	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R731	1-216-295-00	METAL CHIP	0	5%	1/10W	
R732	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R733	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R734	1-216-817-11	METAL CHIP	470	5%	1/16W	
R735	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R736	1-216-864-11	METAL CHIP	0	5%	1/16W	
R738	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R739	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R742	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R744	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R745	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R748	1-216-864-11	METAL CHIP	0	5%	1/16W	
R749	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R750	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R751	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R752	1-216-817-11	METAL CHIP	470	5%	1/16W	
R753	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R754	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R755	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R756	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R757	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R758	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R759	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R760	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R761	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R762	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R769	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R770	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R771	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R775	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R776	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R777	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R778	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R779	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R781	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R782	1-216-813-11	METAL CHIP	220	5%	1/16W	
R783	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W	
R784	1-216-817-11	METAL CHIP	470	5%	1/16W	
R785	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R787	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R791	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R792	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R793	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R794	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R795	1-216-815-11	METAL CHIP	330	5%	1/16W	
R796	1-216-817-11	METAL CHIP	470	5%	1/16W	
R797	1-216-818-11	METAL CHIP	560	5%	1/16W	
R800	1-216-017-00	METAL CHIP	47	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R801	1-216-864-11	METAL CHIP	0	5%	1/16W	
R802	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R803	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R804	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R806	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R807	1-216-817-11	METAL CHIP	470	5%	1/16W	
R808	1-216-801-11	METAL CHIP	22	5%	1/16W	
R809	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R810	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R812	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R813	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R816	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R819	1-216-805-11	METAL CHIP	47	5%	1/16W	
R821	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W	
R823	1-218-876-11	METAL CHIP	16K	0.50%	1/16W	
R825	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R826	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R827	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R828	1-218-871-11	METAL CHIP	10K	0.50%	1/16W	
R829	1-218-899-11	METAL CHIP	150K	0.50%	1/16W	
R830	1-218-847-11	METAL CHIP	1K	0.50%	1/16W	
R831	1-216-864-11	METAL CHIP	0	5%	1/16W	
R833	1-216-295-00	METAL CHIP	0	5%	1/10W	
R851	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R852	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R853	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R854	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R855	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R856	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R857	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R858	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R860	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R861	1-218-879-11	METAL CHIP	22K	0.50%	1/16W	
R862	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R863	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R864	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R865	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R866	1-216-820-11	METAL CHIP	820	5%	1/16W	
R867	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R868	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R869	1-218-881-11	METAL CHIP	27K	0.50%	1/16W	
R870	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R871	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R872	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R873	1-216-814-11	METAL CHIP	270	5%	1/16W	
R874	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R875	1-216-296-00	METAL CHIP	0	5%	1/8W	
R876	1-216-864-11	METAL CHIP	0	5%	1/16W	

Ref. No.	Part No.	Description	Remark
R890	1-216-296-00	METAL CHIP 0 5% 1/8W	
R891	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< NETWORK >	
RB701	1-236-420-11	NETWORK, RES 4.7K	
RB702	1-236-432-11	NETWORK, RES 47K	
RB703	1-236-412-11	NETWORK, RES 1.0K	
RB704	1-236-416-11	NETWORK, RES 2.2K	
RB705	1-236-416-11	NETWORK, RES 2.2K	
RB706	1-236-412-11	NETWORK, RES 1.0K	
RB707	1-236-412-11	NETWORK, RES 1.0K	
RB708	1-236-412-11	NETWORK, RES 1.0K	
		< VIBRATOR >	
X701	1-579-553-11	VIBRATOR 12MHz	
X801	1-579-621-11	VIBRATOR, CRYSTAL 28.375MHz	

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Ref. No.	Part No.	Description	Remark
*	A-7063-220-A	VF-42 BOARD, COMPLETE *********************	
			(Ref. No. 1,000 Series)
	3-942-888-01	HOLDER, LED	
		< CAPACITOR >	
C501	1-126-176-11	ELECT 220uF 20% 10V	
C502	1-163-077-91	CERAMIC CHIP 0.1uF 50V	
C503	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
⚠C504	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
⚠C505	1-164-758-11	CERAMIC CHIP 0.0039uF 5% 50V	
⚠C506	1-164-715-11	CERAMIC CHIP 0.0068uF 5% 50V	
C507	1-127-515-11	ELECT(SOLID) 47uF 20% 6.3V	
C508	1-164-611-11	CERAMIC CHIP 0.001uF 10% 500V	
C509	1-124-257-00	ELECT 2.2uF 20% 50V	
C510	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C511	1-126-090-11	ELECT 82uF 20% 10V	
C512	1-137-306-11	FILM CHIP 0.1uF 5% 16V	
C513	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C514	1-131-381-00	TANTALUM 47uF 10% 10V	
C515	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C516	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
		< CONNECTOR >	
* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
		< DIODE >	
D501	8-719-820-65	DIODE TLS221	
D502	8-719-984-02	LED BR4371F (TALLY)	

Ref. No.	Part No.	Description	Remark
D503	8-719-400-20	DIODE MA152WA	
		< IC >	
IC501	8-759-420-01	IC AN2512S	
		< COIL >	
L501	1-408-976-21	INDUCTOR 33uH	
L502	1-408-785-21	INDUCTOR CHIP 47uH	
⚠L503	1-459-876-41	COIL, FERRITE (HLC)	
		< TRANSISTOR >	
Q501	8-729-120-28	TRANSISTOR 2SC1623	
Q502	8-729-216-31	TRANSISTOR 2SA1163-G	
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP	
		< RESISTOR >	
R501	1-216-033-00	METAL CHIP 220 5% 1/10W	
R502	1-216-041-00	METAL CHIP 470 5% 1/10W	
R503	1-216-041-00	METAL CHIP 470 5% 1/10W	
R506	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R507	1-216-047-00	METAL CHIP 820 5% 1/10W	
R508	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R509	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R510	1-216-005-00	METAL CHIP 15 5% 1/10W	
R511	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R512	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R513	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R514	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R515	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R516	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R517	1-216-025-00	METAL CHIP 100 5% 1/10W	
R518	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R519	1-216-336-11	METAL CHIP 47K 1% 1/10W	
R520	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R521	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R522	1-216-160-00	METAL GLAZE 27 5% 1/8W	
R523	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R524	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R525	1-216-097-00	METAL CHIP 100K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV501	1-241-596-11	RES, ADJ, METAL GRAZE 47K	
RV502	1-241-590-11	RES, ADJ, METAL GRAZE 470	
RV503	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K	
RV504	1-228-762-00	RES, ADJ, METAL GLAZE 1M	
		< TRANSFORMER >	
⚠T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

< THERMISTOR >

Ref. No.	Part No.	Description	Remark
TH501	1-809-350-21	THERMISTOR, NTC (2125)	

< SOCKET >

Ref. No.	Part No.	Description	Remark
⚠W501	1-540-019-21	SOCKET ASSY, CRT	

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* A-7072-010-A VK-32 BOARD, COMPLETE

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(Ref. No. 9,000 Series)

< DIODE >

Ref. No.	Part No.	Description	Remark
D977	8-719-420-14	DIODE MA8082-M	
D978	8-719-420-14	DIODE MA8082-M	
D979	8-719-420-14	DIODE MA8082-M	
D980	8-719-420-14	DIODE MA8082-M	
D981	8-719-420-14	DIODE MA8082-M	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S976	1-572-921-31	SWITCH, KEY BOARD (■ STOP)	
S979	1-572-921-31	SWITCH, KEY BOARD (◀◀ REW)	
S980	1-572-921-31	SWITCH, KEY BOARD (▷ PLAY)	
S983	1-572-921-31	SWITCH, KEY BOARD (▶▶ FF)	
S984	1-572-921-31	SWITCH, KEY BOARD (▮▮ PAUSE)	

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* A-7063-974-A VS-116 BOARD, COMPLETE

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(Ref. No. 4,000 Series)

Ref. No.	Part No.	Description	Remark
	1-691-471-11	CONNECTOR, TRANSLATION 11P	

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C001	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C002	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C003	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C004	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C005	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C006	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C009	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C010	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C011	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C012	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C013	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C014	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C018	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C019	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C020	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C021	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C022	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C023	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C024	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C025	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C026	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C027	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C028	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C029	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C030	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C035	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C049	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C057	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C058	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C059	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C061	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C063	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C064	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C065	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C066	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C067	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C068	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C069	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C070	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C072	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C073	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C074	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C075	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C077	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C078	1-162-934-11	CERAMIC CHIP	3PF	0.25PF	50V
C080	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C081	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C082	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C083	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C085	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C086	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C091	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C092	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C121	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C122	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C123	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C124	1-164-346-11	CERAMIC CHIP	1uF		16V
C125	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C126	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C127	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C128	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C129	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C130	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C132	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C133	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C135	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C136	1-162-974-11	CERAMIC CHIP	0.01uF		50V

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Replace only with part number specified.

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Ref.No.	Part No.	Description			Remark
C137	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C150	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C151	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C156	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C159	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C161	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C167	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C170	1-162-568-11	CERAMIC CHIP	0.33uF		25V
C171	1-162-638-11	CERAMIC CHIP	1uF		16V
C173	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C175	1-128-004-11	ELECT CHIP	10uF	20%	16V
C176	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C177	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C178	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C179	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C180	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C181	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C182	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C187	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C188	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C189	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C192	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C193	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C194	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C199	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C205	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C206	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C207	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C208	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C209	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C213	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C214	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C216	1-128-004-11	ELECT CHIP	10uF	20%	16V
C217	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C218	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C219	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C220	1-126-246-11	ELECT CHIP	220uF	20%	4V
C221	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C222	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C223	1-128-004-11	ELECT CHIP	10uF	20%	16V
C225	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C226	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C228	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C229	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C230	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C231	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C232	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C233	1-128-004-11	ELECT CHIP	10uF	20%	16V
C234	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref.No.	Part No.	Description			Remark
C235	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C236	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C237	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C238	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C239	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C240	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C241	1-126-607-11	ELECT CHIP	47uF	20%	4V
C242	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C245	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C246	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C247	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C248	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C249	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C250	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C255	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C256	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C257	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C259	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C260	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C261	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C262	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C263	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C264	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C265	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C266	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C267	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C268	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C270	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C271	1-128-004-11	ELECT CHIP	10uF	20%	16V
C272	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C273	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C276	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C277	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C278	1-162-638-11	CERAMIC CHIP	1uF		16V
C280	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C281	1-135-146-21	TANTALUM CHIP	0.68uF	20%	25V
C282	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C283	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C284	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C285	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C286	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C288	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C291	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C292	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C294	1-162-638-11	CERAMIC CHIP	1uF		16V
C295	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C296	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C297	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C298	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C299	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C300	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C301	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C303	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C304	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C305	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C306	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C307	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C401	1-164-346-11	CERAMIC CHIP	1uF		16V
C403	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C404	1-164-346-11	CERAMIC CHIP	1uF		16V
C405	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C406	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C408	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C409	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C412	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C415	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C416	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C417	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C418	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C421	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C422	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C423	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C424	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C426	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C427	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C428	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C429	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C430	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C431	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C432	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C433	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C434	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C435	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C436	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C437	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C438	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C439	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C440	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C441	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C442	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C445	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C446	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C447	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C449	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C452	1-135-091-00	TANTALUM CHIP	1uF	20%	16V

Ref. No.	Part No.	Description			Remark
C455	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C456	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C457	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C458	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C459	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C460	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C461	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C462	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C463	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C464	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C465	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C466	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V
C467	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C468	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V
C469	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C470	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C471	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C472	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C474	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C476	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C477	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C478	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C481	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C482	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C483	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C485	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C487	1-128-530-11	ELECT CHIP	33uF	20%	10V
C488	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C489	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
		< FILTER >			
CF151	1-579-371-11	FILTER, CERAMIC			
		< CONNECTOR >			
CN002	1-569-775-11	PIN, CONNECTOR 5P			
CN101	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P			
CN102	1-580-789-11	PIN, CONNECTOR (SMD) 6P			
CN401	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P			
CN403	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P			
CN404	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P			
CN406	1-573-343-21	CONNECTOR, BOARD TO BOARD 30P			
* CN407	1-580-055-11	PIN, CONNECTOR 2P			
		< DIODE >			
D001	8-719-800-76	DIODE	1SS123		
D121	8-719-027-50	DIODE	MA142WK		
D152	8-719-027-48	DIODE	MA142WA		
D159	8-719-027-50	DIODE	MA142WK		
D160	8-719-027-50	DIODE	MA142WK		

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Ref. No.	Part No.	Description	Remark
D161	8-719-404-46	DIODE MA110	
D162	8-719-027-50	DIODE MA142WK	
D163	8-719-027-50	DIODE MA142WK	
⚠D401	8-719-421-27	DIODE MA728	
D402	8-719-027-50	DIODE MA142WK	
D403	8-719-404-46	DIODE MA110	
D456	8-719-420-14	DIODE MA8082	
D462	8-719-420-14	DIODE MA8082	

< FILTER >

Ref. No.	Part No.	Description	Remark
FL121	1-236-188-11	FILTER, BAND PASS	
FL152	1-236-849-21	FILTER, BAND PASS	
FL153	1-236-186-11	FILTER, BAND PASS	
FL154	1-239-055-21	FILTER, LOW PASS (CCD. PAL. Y)	
FL155	1-236-848-21	FILTER, LOW PASS	
FL401	1-406-452-11	COIL, OSC	

< IC >

Ref. No.	Part No.	Description	Remark
IC001	8-752-033-38	IC CXA1202R	
IC003	8-752-053-21	IC CXA1211M	
IC121	8-759-605-61	IC CXA1203N	
IC151	8-752-065-54	IC CXA1207AR	
IC152	8-752-051-40	IC CXA1208R	
IC154	8-752-333-24	IC CXL1506M	
IC155	8-752-053-21	IC CXA1211M	
IC156	8-759-055-82	IC M62353GP	
IC158	8-759-055-82	IC M62353GP	
IC159	8-759-636-33	IC CXA1452N	
⚠IC401	8-759-056-84	IC S-8420AF	
IC402	8-752-838-20	IC CXP80624-428R	
IC403	8-759-258-83	IC uPD75316GF-463-3B9	
IC404	8-759-059-42	IC CXA1481AR	
IC405	8-759-044-78	IC BR9011BF-RE2	
IC406	8-759-081-96	IC uPD6456GS-620	
IC408	8-759-169-11	IC CXA1575M	
IC409	8-759-999-02	IC TL1596CDB	
IC410	8-759-062-02	IC MPC1720VM	

< COIL >

Ref. No.	Part No.	Description	Remark
L001	1-410-381-11	INDUCTOR CHIP 10uH	
L002	1-412-066-21	INDUCTOR CHIP 220uH	
L003	1-412-066-21	INDUCTOR CHIP 220uH	
L005	1-412-060-11	INDUCTOR CHIP 22uH	
L007	1-412-058-11	INDUCTOR CHIP 10uH	
L008	1-410-658-31	INDUCTOR CHIP 220uH	
L009	1-410-380-31	INDUCTOR CHIP 8.2uH	
L010	1-410-655-31	INDUCTOR CHIP 120uH	
L011	1-412-280-31	INDUCTOR 330uH	
L012	1-410-387-11	INDUCTOR CHIP 33uH	
L013	1-410-657-21	INDUCTOR CHIP 180uH	
L015	1-410-381-11	INDUCTOR CHIP 10uH	
L121	1-410-381-11	INDUCTOR CHIP 10uH	
L150	1-410-384-31	INDUCTOR CHIP 18uH	
L152	1-410-385-11	INDUCTOR CHIP 22uH	
L154	1-410-390-11	INDUCTOR CHIP 56uH	
L155	1-410-390-11	INDUCTOR CHIP 56uH	
L160	1-412-058-11	INDUCTOR CHIP 10uH	
L161	1-410-385-11	INDUCTOR CHIP 22uH	
L162	1-412-280-31	INDUCTOR 330uH	
L163	1-410-167-41	INDUCTOR CHIP 820uH	
L164	1-410-657-21	INDUCTOR CHIP 180uH	
L169	1-410-392-11	INDUCTOR CHIP 82uH	
L170	1-410-381-11	INDUCTOR CHIP 10uH	
L171	1-410-384-31	INDUCTOR CHIP 18uH	
L175	1-410-393-11	INDUCTOR CHIP 100uH	
L176	1-410-656-11	INDUCTOR CHIP 150uH	
L177	1-412-058-11	INDUCTOR CHIP 10uH	
L178	1-412-062-11	INDUCTOR CHIP 47uH	
L179	1-410-379-31	INDUCTOR CHIP 6.8uH	
L180	1-410-393-11	INDUCTOR CHIP 100uH	
L181	1-410-393-11	INDUCTOR CHIP 100uH	
L182	1-410-655-31	INDUCTOR CHIP 120uH	
L184	1-410-386-11	INDUCTOR CHIP 27uH	
L185	1-412-058-11	INDUCTOR CHIP 10uH	
L186	1-412-052-21	INDUCTOR CHIP 1uH	
L401	1-412-056-11	INDUCTOR CHIP 4.7uH	
L402	1-412-058-11	INDUCTOR CHIP 10uH	
L403	1-412-062-11	INDUCTOR CHIP 47uH	
L404	1-412-058-11	INDUCTOR CHIP 10uH	
L405	1-412-058-11	INDUCTOR CHIP 10uH	
L406	1-412-058-11	INDUCTOR CHIP 10uH	
L407	1-414-261-11	INDUCTOR 1uH	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS401	1-576-122-11	LINK, IC (0.4A CCP2E10)	
⚠PS402	1-576-123-21	LINK, IC (0.8A CCP2E20)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-216-22	TRANSISTOR 2SA1162	
Q003	8-729-230-60	TRANSISTOR 2SA1586	
Q008	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q010	8-729-403-35	TRANSISTOR UN5113	
Q019	8-729-120-28	TRANSISTOR 2SC1623	
Q020	8-729-120-28	TRANSISTOR 2SC1623	
Q021	8-729-905-23	TRANSISTOR 2SA1576-R	
Q022	8-729-230-60	TRANSISTOR 2SA1586	
Q024	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q025	8-729-014-16	TRANSISTOR RN2302	
Q026	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q121	8-729-403-35	TRANSISTOR UN5113	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
Q123	8-729-402-42	TRANSISTOR	UN5213			
Q124	8-729-403-35	TRANSISTOR	UN5113			
Q125	8-729-117-73	TRANSISTOR	2SC4178-F14			
Q126	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q151	8-729-101-07	TRANSISTOR	2SB798-DL			
Q152	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q154	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q158	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q160	8-729-403-35	TRANSISTOR	UN5113			
Q161	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q162	8-729-403-35	TRANSISTOR	UN5113			
Q166	8-729-230-60	TRANSISTOR	2SA1586			
Q168	8-729-403-35	TRANSISTOR	UN5113			
Q170	8-729-420-20	TRANSISTOR	XN4312			
Q171	8-729-117-73	TRANSISTOR	2SC4178-F14			
Q175	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q176	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q177	8-729-230-60	TRANSISTOR	2SA1586			
Q178	8-729-230-60	TRANSISTOR	2SA1586			
Q180	8-729-422-54	TRANSISTOR	XN4215			
Q182	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q183	8-729-420-53	TRANSISTOR	UN5115			
Q184	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q189	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q191	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q192	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q194	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q195	8-729-230-60	TRANSISTOR	2SA1586			
Q196	8-729-403-35	TRANSISTOR	UN5113			
Q199	8-729-807-87	TRANSISTOR	2SB1295-UL6			
Q200	8-729-013-88	TRANSISTOR	RN1302			
Q203	8-729-230-60	TRANSISTOR	2SA1586			
Q204	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q205	8-729-402-42	TRANSISTOR	UN5213			
Q207	8-729-403-35	TRANSISTOR	UN5113			
Q208	8-729-013-88	TRANSISTOR	RN1302			
Q210	8-729-402-42	TRANSISTOR	UN5213			
Q212	8-729-230-60	TRANSISTOR	2SA1586			
Q214	8-729-420-12	TRANSISTOR	XN4213			
Q219	8-729-810-13	TRANSISTOR	UN5112			
Q220	8-729-402-45	TRANSISTOR	UN5212			
Q221	8-729-420-12	TRANSISTOR	XN4213			
Q222	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q223	8-729-402-42	TRANSISTOR	UN5213			
Q226	8-729-403-35	TRANSISTOR	UN5113			
Q229	8-729-230-60	TRANSISTOR	2SA1586			
Q230	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q231	8-729-230-60	TRANSISTOR	2SA1586			
Q232	8-729-402-32	TRANSISTOR	2SD1819A-R			
Q233	8-729-402-32	TRANSISTOR	2SD1819A-R			

Ref. No.	Part No.	Description				Remark
Q234	8-729-230-60	TRANSISTOR	2SA1586			
Q236	8-729-420-56	TRANSISTOR	UN511E			
Q237	8-729-230-60	TRANSISTOR	2SA1586			
Q401	8-729-402-48	TRANSISTOR	UN521E			
Q405	8-729-013-88	TRANSISTOR	RN1302			
Q409	8-729-017-67	TRANSISTOR	2SB1574			
		< RESISTOR >				
R001	1-216-801-11	METAL CHIP	22	5%	1/16W	
R002	1-216-818-11	METAL CHIP	560	5%	1/16W	
R004	1-216-815-11	METAL CHIP	330	5%	1/16W	
R005	1-216-817-11	METAL CHIP	470	5%	1/16W	
R006	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R007	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R012	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R013	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R016	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R017	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R020	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R021	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R022	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R023	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R024	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R025	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R026	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R027	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R028	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R029	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R030	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R031	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R033	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R049	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R050	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R051	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R052	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R054	1-216-817-11	METAL CHIP	470	5%	1/16W	
R055	1-216-820-11	METAL CHIP	820	5%	1/16W	
R056	1-216-864-11	METAL CHIP	0	5%	1/16W	
R057	1-216-818-11	METAL CHIP	560	5%	1/16W	
R058	1-216-818-11	METAL CHIP	560	5%	1/16W	
R060	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R061	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R062	1-216-818-11	METAL CHIP	560	5%	1/16W	
R063	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R064	1-216-817-11	METAL CHIP	470	5%	1/16W	
R065	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R066	1-216-809-11	METAL CHIP	100	5%	1/16W	
R067	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R070	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R071	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	

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Ref.No.	Part No.	Description	Remark
R072	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R073	1-809-358-11	THERMISTOR, NTC 15K	
R076	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R078	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R079	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R081	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R082	1-216-804-11	METAL CHIP 39 5% 1/16W	
R083	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R085	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R086	1-216-817-11	METAL CHIP 470 5% 1/16W	
R087	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R088	1-216-808-11	METAL CHIP 82 5% 1/16W	
R090	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R097	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R113	1-809-350-21	THERMISTOR, NTC 470	
R122	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R123	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R124	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R125	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R126	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R127	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R129	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R130	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R131	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R132	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R133	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R134	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R135	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R136	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R137	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R138	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R139	1-216-817-11	METAL CHIP 470 5% 1/16W	
R140	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R141	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R142	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R143	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R144	1-216-817-11	METAL CHIP 470 5% 1/16W	
R145	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R146	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R150	1-216-864-11	METAL CHIP 0 5% 1/16W	
R151	1-216-296-00	METAL CHIP 0 5% 1/8W	
R152	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R153	1-216-304-11	METAL CHIP 3.3 5% 1/10W	
R154	1-216-820-11	METAL CHIP 820 5% 1/16W	
R155	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R156	1-216-296-00	METAL CHIP 0 5% 1/8W	
R158	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R160	1-216-819-11	METAL CHIP 680 5% 1/16W	
R161	1-216-809-11	METAL CHIP 100 5% 1/16W	
R164	1-216-811-11	METAL CHIP 150 5% 1/16W	
R167	1-216-820-11	METAL CHIP 820 5% 1/16W	
R168	1-216-820-11	METAL CHIP 820 5% 1/16W	
R170	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R175	1-216-810-11	METAL CHIP 120 5% 1/16W	
R177	1-216-819-11	METAL CHIP 680 5% 1/16W	
R178	1-216-817-11	METAL CHIP 470 5% 1/16W	
R179	1-216-820-11	METAL CHIP 820 5% 1/16W	
R189	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R190	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R191	1-216-864-11	METAL CHIP 0 5% 1/16W	
R192	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R193	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R194	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R196	1-216-815-11	METAL CHIP 330 5% 1/16W	
R198	1-216-817-11	METAL CHIP 470 5% 1/16W	
R200	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R201	1-216-815-11	METAL CHIP 330 5% 1/16W	
R202	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R203	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R204	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R205	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R206	1-216-813-11	METAL CHIP 220 5% 1/16W	
R208	1-216-864-11	METAL CHIP 0 5% 1/16W	
R211	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R213	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R216	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R217	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R218	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R219	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R220	1-216-811-11	METAL CHIP 150 5% 1/16W	
R221	1-216-864-11	METAL CHIP 0 5% 1/16W	
R222	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R223	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R224	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R226	1-216-819-11	METAL CHIP 680 5% 1/16W	
R228	1-216-813-11	METAL CHIP 220 5% 1/16W	
R231	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R232	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R234	1-216-864-11	METAL CHIP 0 5% 1/16W	
R238	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R242	1-216-818-11	METAL CHIP 560 5% 1/16W	
R243	1-216-809-11	METAL CHIP 100 5% 1/16W	
R244	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R245	1-216-817-11	METAL CHIP 470 5% 1/16W	
R246	1-216-817-11	METAL CHIP 470 5% 1/16W	
R247	1-216-296-00	METAL CHIP 0 5% 1/8W	
R248	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R250	1-216-810-11	METAL CHIP 120 5% 1/16W	
R251	1-216-806-11	METAL GLAZE 56 5% 1/16W	
R253	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref.No.	Part No.	Description				Remark
R254	1-216-818-11	METAL CHIP	560	5%	1/16W	
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R256	1-216-864-11	METAL CHIP	0	5%	1/16W	
R257	1-216-818-11	METAL CHIP	560	5%	1/16W	
R258	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R259	1-216-816-11	METAL CHIP	390	5%	1/16W	
R260	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R263	1-216-864-11	METAL CHIP	0	5%	1/16W	
R266	1-216-864-11	METAL CHIP	0	5%	1/16W	
R267	1-216-864-11	METAL CHIP	0	5%	1/16W	
R270	1-216-864-11	METAL CHIP	0	5%	1/16W	
R271	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R272	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R276	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R277	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R278	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R279	1-216-818-11	METAL CHIP	560	5%	1/16W	
R280	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R281	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R282	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R283	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R285	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R286	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R290	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R291	1-216-820-11	METAL CHIP	820	5%	1/16W	
R293	1-216-807-11	METAL CHIP	68	5%	1/16W	
R294	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R295	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R297	1-216-820-11	METAL CHIP	820	5%	1/16W	
R298	1-216-820-11	METAL CHIP	820	5%	1/16W	
R299	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R300	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R302	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R303	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R304	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R305	1-216-818-11	METAL CHIP	560	5%	1/16W	
R306	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R308	1-216-819-11	METAL CHIP	680	5%	1/16W	
R309	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R310	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R311	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R312	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R314	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R315	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R316	1-216-817-11	METAL CHIP	470	5%	1/16W	
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R321	1-216-864-11	METAL CHIP	0	5%	1/16W	
R323	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R324	1-216-817-11	METAL CHIP	470	5%	1/16W	
R325	1-216-816-11	METAL CHIP	390	5%	1/16W	
R329	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R331	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R333	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R334	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R335	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R337	1-216-864-11	METAL CHIP	0	5%	1/16W	
R339	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R341	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R342	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R343	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R344	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R345	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R346	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R347	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R349	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R350	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R352	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R353	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R354	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R355	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R356	1-216-817-11	METAL CHIP	470	5%	1/16W	
R357	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R358	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R359	1-216-296-00	METAL CHIP	0	5%	1/8W	
R360	1-216-296-00	METAL CHIP	0	5%	1/8W	
R361	1-216-864-11	METAL CHIP	0	5%	1/16W	
R362	1-216-810-11	METAL CHIP	120	5%	1/16W	
R366	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R371	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R373	1-216-817-11	METAL CHIP	470	5%	1/16W	
R374	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R375	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R376	1-216-817-11	METAL CHIP	470	5%	1/16W	
R377	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R378	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R379	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R380	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R381	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R382	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R383	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R384	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R385	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R386	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R387	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R388	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R389	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R390	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R391	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

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Ref. No.	Part No.	Description				Remark
R392	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R393	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R394	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R397	1-216-820-11	METAL CHIP	820	5%	1/16W	
R398	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R401	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R404	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R405	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R406	1-216-809-11	METAL CHIP	100	5%	1/16W	
R407	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R408	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R409	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R411	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R412	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R413	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R414	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R418	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R419	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R420	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R421	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R422	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R423	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R424	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R425	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R426	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R427	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R428	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R429	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R430	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R431	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R433	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R435	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R436	1-216-864-11	METAL CHIP	0	5%	1/16W	
R437	1-216-817-11	METAL CHIP	470	5%	1/16W	
R438	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R439	1-216-864-11	METAL CHIP	0	5%	1/16W	
R441	1-216-864-11	METAL CHIP	0	5%	1/16W	
R442	1-216-864-11	METAL CHIP	0	5%	1/16W	
R443	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R445	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R449	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R451	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R452	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R454	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R457	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R460	1-216-864-11	METAL CHIP	0	5%	1/16W	
R461	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R462	1-216-809-11	METAL CHIP	100	5%	1/16W	
R463	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R468	1-216-019-00	METAL CHIP	56	5%	1/10W	
R472	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R474	1-217-671-11	METAL CHIP	1	5%	1/10W	
R475	1-217-671-11	METAL CHIP	1	5%	1/10W	
R476	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R479	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R480	1-217-671-11	METAL CHIP	1	5%	1/10W	
R481	1-217-671-11	METAL CHIP	1	5%	1/10W	
R484	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R485	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R487	1-216-864-11	METAL CHIP	0	5%	1/16W	
R488	1-216-809-11	METAL CHIP	100	5%	1/16W	
R489	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R490	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R493	1-216-864-11	METAL CHIP	0	5%	1/16W	
R495	1-216-864-11	METAL CHIP	0	5%	1/16W	
R497	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R498	1-216-864-11	METAL CHIP	0	5%	1/16W	

< NETWORK >

Ref. No.	Part No.	Description
RB401	1-236-442-11	NETWORK, RES 330K
RB402	1-236-907-11	NETWORK, RES 100K
RB403	1-236-907-11	NETWORK, RES 100K
RB404	1-236-908-11	NETWORK, RES 10K
RB405	1-236-436-11	NETWORK, RES 100K
RB406	1-236-908-11	NETWORK, RES 10K
RB407	1-236-907-11	NETWORK, RES 100K
RB408	1-236-908-11	NETWORK, RES 10K
RB409	1-236-904-11	NETWORK, RES 1K
RB410	1-236-412-11	NETWORK, RES 1.0K
RB411	1-236-424-11	NETWORK, RES 10K
RB414	1-236-904-11	NETWORK, RES 1K
RB416	1-236-412-11	NETWORK, RES 1.0K
RB418	1-236-408-11	NETWORK, RES 470
RB421	1-236-908-11	NETWORK, RES 10K
RB422	1-236-424-11	NETWORK, RES 10K
RB423	1-236-424-11	NETWORK, RES 10K
RB424	1-236-424-11	NETWORK, RES 10K
RB425	1-236-424-11	NETWORK, RES 10K
RB426	1-236-412-11	NETWORK, RES 1.0K

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description
RV151	1-238-087-11	RES, ADJ, CERMET 1K

Ref.No.	Part No.	Description	Remark
		< FLEXIBLE BOARD >	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
		< VIBRATOR >	
X151	1-579-366-11	VIBRATOR, CRYSTAL 4.43MHz	
X401	1-579-063-21	VIBRATOR, CERAMIC 4.19MHz	
X402	1-579-049-21	VIBRATOR, CRYSTAL 32.768kHz	
X403	1-579-368-31	VIBRATOR, CRYSTAL 11.719MHz	

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MISCELLANEOUS
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Ref.No.	Part No.	Description	Remark
18	1-696-487-11	CABLE, FLAT (FFC-90)	
85	1-692-257-11	SWITCH, PUSH (ZOOM)	
105	1-547-548-11	LENS, ZOOM (VCL-6210WC)(TYPE A)	
105	1-547-630-11	LENS, ZOOM (VCL-6210WF)(TYPE B)	
108	1-547-558-21	FILTER BLOCK, OPTICAL	
123	1-751-814-11	CABLE, FLAT (FFC-124)	
257	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
321	1-641-643-12	FP-444 FLEXIBLE BOARD	
322	1-691-254-13	CONNECTOR, TRANSLATION 10P	
H516	1-550-104-32	HOLDER, BATTERY	
IC875	A-7030-369-A	CCD BLOCK ASSY (ICX055AK-1)(CCD IMAGER)	
J901	1-537-281-41	TERMINAL BOARD	
⚠PS901	1-532-841-21	LINK, IC (1.6A PRF1600)	
⚠PS902	1-532-841-21	LINK, IC (1.6A PRF1600)	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	
M904	3-708-494-11	METER ASSY, IG (IRIS)(TYPE A)	
M904	3-708-653-01	IRIS UNIT (TYPE B)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)(TYPE A)	
M905	3-708-656-01	MOTOR UNIT, FOCUS (TYPE B)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)(TYPE A)	
M906	3-708-654-01	MOTOR UNIT, ZOOM (TYPE B)	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	
S005	1-570-771-21	SWITCH (C DOWN)	
⚠V901	1-452-565-11	CRT ASSY (M01KKD70WB)	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	
W987	1-696-622-11	FP-591 FLEXIBLE BOARD	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

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ACCESSORIES & PACKING MATERIALS
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Ref.No.	Part No.	Description	Remark
	1-574-039-11	CORD, CONNECTION (A/V connecting cable (monaural), 1.5m)(EXCEPT E)	
	1-764-622-11	ADAPTOR, CONVERSION (AEP, UK, Russian)	
	3-712-673-01	SCREWDRIVER (E)	
	3-758-358-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH)(E, AUS, Tourist)	
	3-758-358-61	MANUAL, INSTRUCTION (FRENCH, GERMAN)(E, Tourist)	
	3-758-358-71	MANUAL, INSTRUCTION (ARABIC)(E)	
	3-758-358-81	MANUAL, INSTRUCTION (CHINESE)(E, Tourist)	
	3-758-359-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH)(AEP, UK)	
	3-758-359-41	MANUAL, INSTRUCTION (GERMAN, ITALIAN)(AEP, Russian)	
	3-758-359-51	MANUAL, INSTRUCTION (FRENCH, DUTCH)(AEP)	
	3-758-359-61	MANUAL, INSTRUCTION (SWEDISH, PORTUGUESE)(AEP)	
	3-758-359-71	MANUAL, INSTRUCTION(DANISH, FINNISH)(AEP)	
	3-758-359-81	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN)(Russian)	
*	3-949-004-01	CUSHION, ACC (EXCEPT Russian)	
*	3-949-005-01	CUSHION (LOWER)	
*	3-952-711-01	CUSHION, ACC (Russian)	
*	3-958-245-01	INDIVIDUAL CARTON (AEP, UK, Russian)	
*	3-958-245-11	INDIVIDUAL CARTON (E, AUS, Tourist)	
**	AC-V25/V25A	AC POWER ADAPTOR	
***	NP-55	BATTERY PACK	

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

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HARDWARE LIST

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Ref.No.	Part No.	Description	Remark
#1	7-627-853-57	PRECISION SCREW +P 2X5	

Be sure to read "Precautions for Replacement of CCD Imager" on page 78 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 7
CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 196.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part)[Note 1]	J-6082-053-B	
J-6	Extension cord (10P, 1 mm)	J-6082-064-A	For extension of JK-99 board
J-7	Extension cord (20P, 0.8 mm)	J-6082-196-A	For extension of CN-84 board (Cabinet (R)) (For the video and the camera section adjustment)
			For extension of AU-171 board (During the repair of AU-171 board)
J-8	Extension cord (16P, 0.8 mm)	J-6082-136-A	For the extension of the lens block (During the repair of the camera section)
J-9	Relay board (21P, 0.5 mm)[Note 2]	J-6082-176-A	For the extension of the lens block (During the repair of the camera section)
J-10	Measuring pin for camera section	J-6082-139-A	For the camera section adjustment
J-11	Extension cord (42P, 0.8 mm)	J-6082-195-A	For the extension of DD-67 board (During the repair of the video section)
J-12	Siemens star	J-6080-875-A	For flange back check
J-13	Extension cord (20P, 0.5 mm)[Note 2]	J-6082-138-A	For extension between the lens block (FPC) and VC-147 board (CN851) (During the repair of the camera section)
J-14	Extension board (30P, 0.8 mm)	J-6082-167-A	For the extension of VS-116 board (For the mecha deck check)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-147 board (CN851).

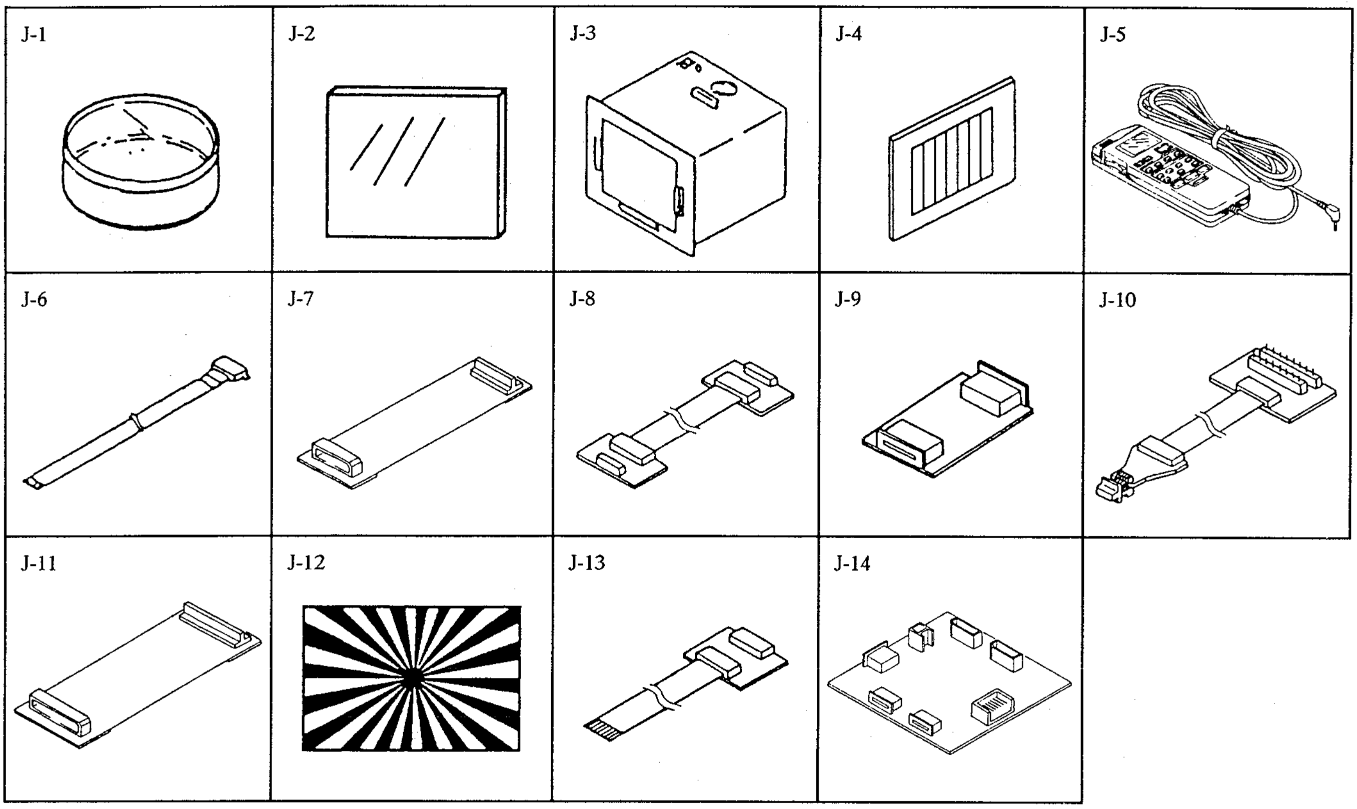

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13
J-14

Fig. 7-1.

7-1-2. Preparations

Note: For further details on how to remove the cabinet and each board, refer to "2. Disassembly".

1) Connect the equipments for adjustment as shown in Fig. 7-3.
2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-116 board CN102.

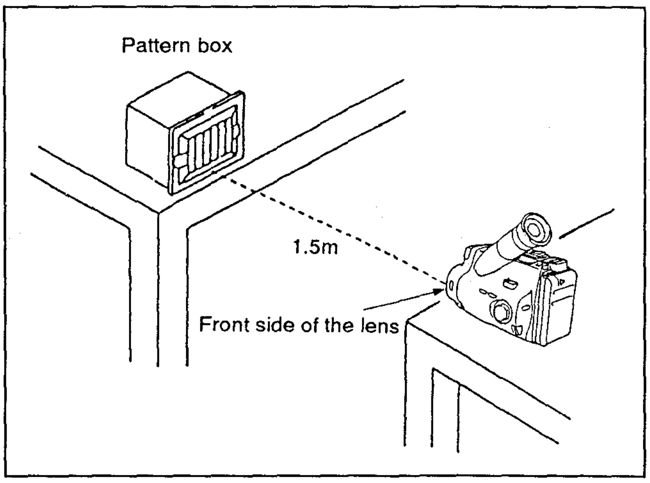

Pattern box
1.5m
Front side of the lens

Fig. 7-2.

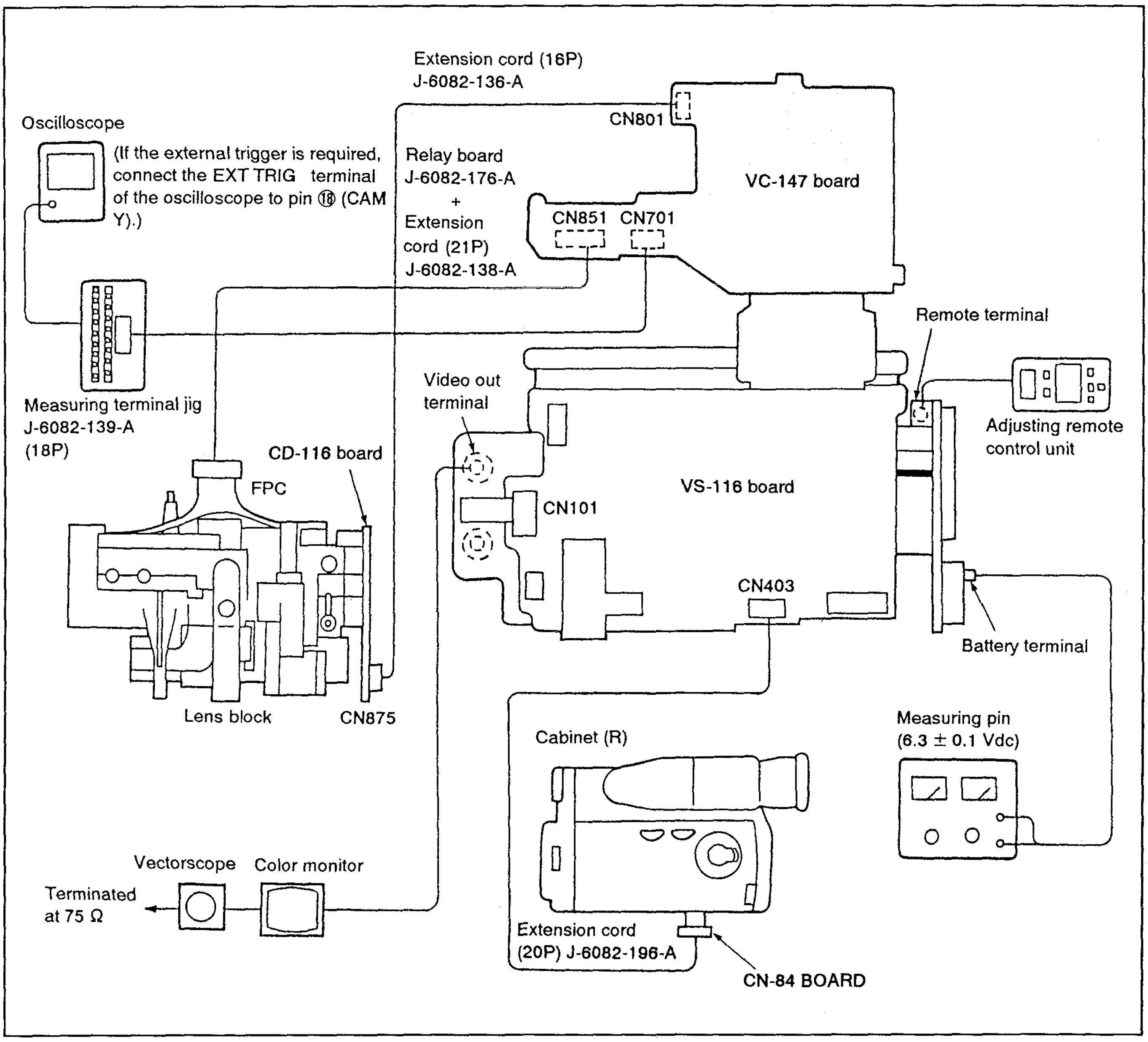

Extension cord (16P)
J-6082-136-A
Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to pin ⑱ (CAM Y).)
CN801
Relay board
J-6082-176-A
+
Extension cord (21P)
J-6082-138-A
VC-147 board
CN851 CN701
Remote terminal
Measuring terminal jig
J-6082-139-A
(18P)
Video out terminal
Adjusting remote control unit
CD-116 board
FPC
VS-116 board
CN101
CN403
Battery terminal
Lens block
CN875
Cabinet (R)
Measuring pin
(6.3 ± 0.1 Vdc)
Vectorscope
Color monitor
Terminated at 75 Ω
Extension cord
(20P) J-6082-196-A
CN-84 BOARD

Fig. 7-3.

7-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (CF-34 board S997) ····Camera
2. Standby switch (SW-223 board S519)·················· Standby
3. LENS OPEN switch (MF-214 board S973) ············· OPEN

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   (In this case don't touch zoom SW)

Color bar chart standard picture frame

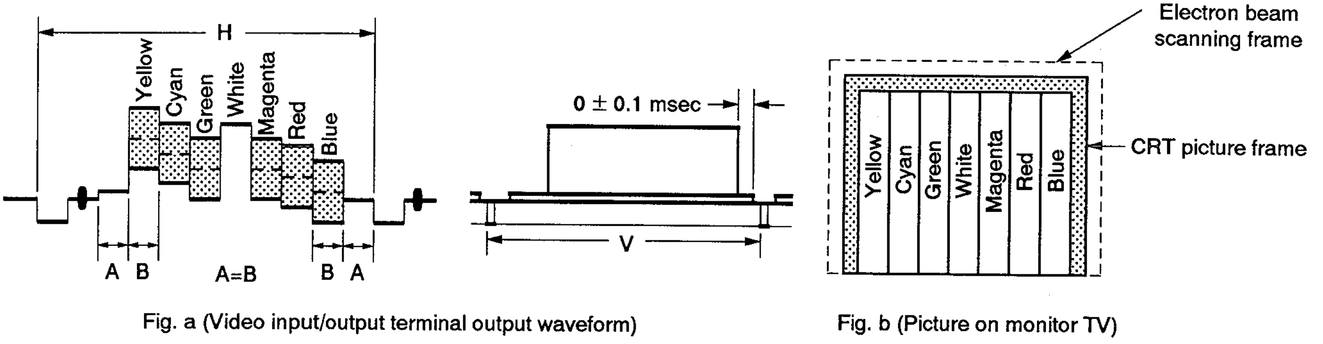

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

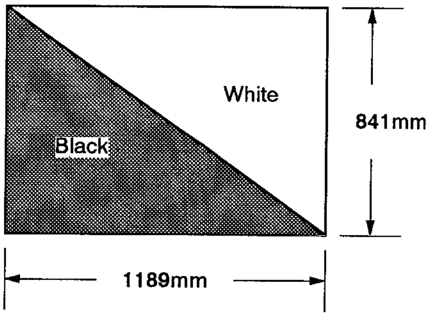

White
Black
841mm
1189mm

Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-147 board IC702). These processes are carried out by the camera micro processor (VC-147 board IC709). This micro processor reads the data written in the non-volatile memory (VC-147 board IC712), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (DD-67 board J902).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

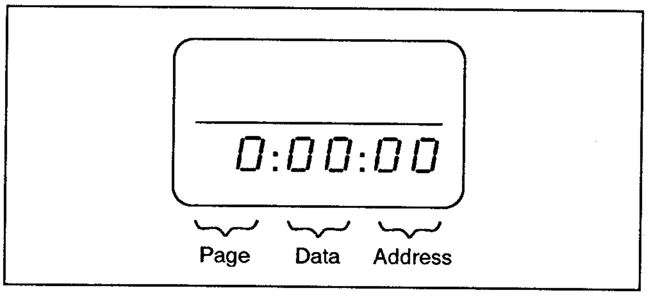


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - Changing the address
     The address will increase when the FF (▶▶) button is pressed, and decrease when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and the camera section (F page) can be adjusted.
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

7-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values after performing “Page F Data Initialization” and “Page F Data Modification”. They are different from the value after performing all the adjustments.

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>00</td><td>ID</td><td>Set ID</td><td>3E</td><td>3E</td></tr>
<tr><td>01</td><td>FADER LEVEL</td><td>AE REF level modification during fader</td><td>E0</td><td>E0</td></tr>
<tr><td>02</td><td>FADER ENDTIM</td><td>The setting of the AE REF modulation time during fader</td><td>10</td><td>10</td></tr>
<tr><td>03</td><td>CS SL</td><td>Carrier balance adjustment</td><td>35</td><td></td></tr>
<tr><td>04</td><td>VSUB</td><td>CCD imager V SUB adjustment [IC702 ③]</td><td>80</td><td></td></tr>
<tr><td>05</td><td>VPGH</td><td>CCD imager VRG adjustment [IC702 ④]</td><td>80</td><td></td></tr>
<tr><td>06</td><td>VREF Y</td><td>Camera core Y D/A standard voltage, SYNC level adjustment [IC702 ⑤]</td><td>7B</td><td></td></tr>
<tr><td>07</td><td>VREF C</td><td>Camera core CHROMA D/A standard voltage, BURST level adjustment [IC702 ⑥]</td><td>99</td><td></td></tr>
<tr><td>08</td><td>HALL GAIN</td><td>Hole amplifier gain adjustment [IC702 ⑦]
HALL adjustment</td><td>47</td><td></td></tr>
<tr><td>09</td><td>HALL OFFSET</td><td>Hole amplifier offset adjustment [IC702 ⑧]</td><td>71</td><td></td></tr>
<tr><td>0A</td><td>LOWLIGHT CS</td><td>Low luminance intensity REF level modulation start setting</td><td>C0</td><td>C0</td></tr>
<tr><td>0B</td><td>REF 2V</td><td>2V standard voltage for hole element [IC702 ⑫]</td><td>68</td><td>68</td></tr>
<tr><td>0C</td><td>AD REF</td><td>Black level setting during A/D conversion, A/D off set adjustment [IC702 ⑬]</td><td>72</td><td></td></tr>
<tr><td>0D</td><td>CORE DETH</td><td>CCD correction control</td><td>04</td><td>04</td></tr>
<tr><td>0E</td><td>CORE VTR DELAY</td><td>1HDL longitudinal setting during VTR playback</td><td>16</td><td>16</td></tr>
<tr><td>0F</td><td>CORE APCN4</td><td>Horizontal aperture setting</td><td>35</td><td>35</td></tr>
<tr><td>10</td><td>CORE APCN5</td><td>Vertical aperture setting</td><td>3D</td><td>3D</td></tr>
<tr><td>11</td><td>CORE EFECT</td><td>Special effect control</td><td>A0</td><td>A0</td></tr>
<tr><td>12</td><td>CORE MATR</td><td>BLUE matrix constant</td><td>24</td><td>24</td></tr>
<tr><td>13</td><td>CORE MATB</td><td>RED matrix constant</td><td>6C</td><td>6C</td></tr>
<tr><td>14</td><td>CORE BURST LEVEL</td><td>Burst flag level setting, color modulation ON/OFF
<table>
<tr><th>Data</th><th>Adjustment modeAdjustment</th></tr>
<tr><td>2E</td><td>Color modulation stopped</td></tr>
<tr><td>38</td><td>Normal level</td></tr>
</table></td><td>38</td><td>38</td></tr>
<tr><td>15</td><td>CORE CHROMA DLY</td><td>Y/C delay adjustment</td><td>02</td><td>02</td></tr>
<tr><td>16</td><td>CORE Y SETUP</td><td>Set up level setting</td><td>06</td><td>06</td></tr>
<tr><td>17</td><td>CORE VHAPCN</td><td>Slice and level setting of the aperture signal</td><td>17</td><td>17</td></tr>
<tr><td>18</td><td>CORE B-Y GAIN</td><td>B–Y GAIN
Color reproduction adjustments</td><td>13</td><td></td></tr>
<tr><td>19</td><td>CORE R-Y GAIN</td><td>R–Y GAIN</td><td>11</td><td></td></tr>
<tr><td>1A</td><td>CORE R-Y HUE</td><td>R–Y HUE</td><td>FF</td><td></td></tr>
<tr><td>1B</td><td>CORE B-Y HUE</td><td>B–Y HUE</td><td>FD</td><td></td></tr>
<tr><td>1C</td><td>CS/APCCUT</td><td>Low luminance intensity aperture and chroma suppress level</td><td>22</td><td>22</td></tr>
</table>

Table 7-2 (1).

Address	Name	Function [ ] indicate the adjustment voltage output terminal		Adjustment data	
				Initial value	Memo column
1D	NEXT LINE DEFECT BIT	CCD correction pattern	CCD imager correction data write	00	
1E	CCD DEFECT0	CCD correction data		00	
1F	CCD DEFECT1	CCD correction data		00	
20	CCD DEFECT2	CCD correction data		00	
21	CCD DEFECT3	CCD correction data		00	
22	CCD DEFECT4	CCD correction data		00	
23	CCD DEFECT5	CCD correction data		00	
24	CCD DEFECT6	CCD correction data		00	
25	CCD DEFECT7	CCD correction data		00	
26	CCD DEFECT8	CCD correction data		00	
27	CCD DEFECT9	CCD correction data		00	
28	CCD DEFECT10	CCD correction data		00	
29	CCD DEFECT11	CCD correction data		00	
2A	CCD DEFECT12	CCD correction data		00	
2B	CCD DEFECT13	CCD correction data		00	
2C	CCD DEFECT14	CCD correction data		00	
2D	RREF L	3200k Red standard data LSB	Auto white balance preset adjustment	72	
2E	RREF H	3200k Red standard data MSB		5F	
2F	GREF L	3200k Green standard data LSB		D4	
30	GREF H	3200k Green standard data MSB		63	
31	BREF L	3200k Blue standard data LSB		3B	
32	BREF H	3200k Blue standard data MSB		2C	
33	RCONTREF	3200k RCONT adjustment value	Pre-white balance adjustment	42	
34	BCONTREF	3200k BCONT adjustment value		4A	
35	AWB NOWM R	Red regular correction coefficient	Auto white balance adjustment	7E	
36	AWB NORM B	Blue regular correction coefficient		96	
37	AWB SHUT IN	Indoor determination shutter data		A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data		A0	A0
39	AWB IRIS IN	Indoor determination hole data	IRIS IN/OUT adjustment	79	
3A	AWB IRIS OUT	Outdoor determination hole data		7F	
3B	AWB G LEVEL	High luminance section green integral level		02	02
3C	AWB G WIDTH	High luminance section green integral level range		03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient	Linear matrix adjustment	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient		00	
3F	AWB SELECT	AWB mode selection		00	00
40	AWB DIFF	Standard difference from the outdoor fixed value		0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient		48	48
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient		78	78
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient		60	60
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient		40	40
45	AWB TOP SLP R	AWB incoming frame top R coefficient		66	66
46	AWB TOP SLP B	AWB incoming frame top B coefficient		18	18

Table 7-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>47</td><td>AWB KEIKO R</td><td>AWB incoming frame fluorescent light R coefficient</td><td>66</td><td>66</td></tr>
<tr><td>48</td><td>AWB KEIKO B</td><td>AWB incoming frame fluorescent light B coefficient</td><td>18</td><td>18</td></tr>
<tr><td>49</td><td>AWB BOTTOM UP</td><td>AWB incoming frame bottom upper value</td><td>C2</td><td>C2</td></tr>
<tr><td>4A</td><td>AWB BOTTOM DWN</td><td>AWB incoming frame bottom lower value</td><td>8C</td><td>8C</td></tr>
<tr><td>4B</td><td>AWB MIDDLE UP</td><td>AWB incoming frame middle upper value</td><td>AD</td><td>AD</td></tr>
<tr><td>4C</td><td>AWB MIDDLE DWN</td><td>AWB incoming frame middle lower value</td><td>96</td><td>96</td></tr>
<tr><td>4D</td><td>AWB TOP UP</td><td>AWB incoming frame top upper value</td><td>78</td><td>78</td></tr>
<tr><td>4E</td><td>AWB TOP DWN</td><td>AWB incoming frame top lower value</td><td>60</td><td>60</td></tr>
<tr><td>4F</td><td>AWB KEIKO</td><td>AWB incoming frame fluorescent light output lower value</td><td>66</td><td>66</td></tr>
<tr><td>50</td><td>AWB KEIKO DWN</td><td>AWB incoming frame fluorescent light lower value</td><td>59</td><td>59</td></tr>
<tr><td>51</td><td>AWB R TOP LMT</td><td>AWB incoming frame Rcont upper value</td><td>6E</td><td>6E</td></tr>
<tr><td>52</td><td>AWB R DWN LMT</td><td>AWB incoming frame Rcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>53</td><td>AWB B TOP LMT</td><td>AWB incoming frame Bcont upper value</td><td>83</td><td>83</td></tr>
<tr><td>54</td><td>AWB B IN TOP</td><td>AWB incoming frame Bcont</td><td>67</td><td>67</td></tr>
<tr><td>55</td><td>AWB B IN MAX</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>56</td><td>AWB B OUT MIN</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>57</td><td>AWB B OUT DWN</td><td>AWB incoming frame Bcont</td><td>4A</td><td>4A</td></tr>
<tr><td>58</td><td>AWB B DWN LMT</td><td>AWB incoming frame Bcont lower value</td><td>1B</td><td>1B</td></tr>
<tr><td>59</td><td>AWB LL LMT</td><td>Low luminance intensity limiter</td><td>06</td><td>06</td></tr>
<tr><td>5A</td><td>AWB T M DIVID</td><td>AWB incoming frame upper, middle border value</td><td>5E</td><td>5E</td></tr>
<tr><td>5B</td><td>AWB B M DIVID</td><td>AWB incoming frame middle, lower border value</td><td>39</td><td>39</td></tr>
<tr><td>5C</td><td>AWB DELAY TM</td><td>AWB tracking speed<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>01</td><td>High speed tracking mode</td></tr><tr><td>0C</td><td>Normal</td></tr></table></td><td>0C</td><td>0C</td></tr>
<tr><td>5D</td><td>AWB FAST TM</td><td>AWB initial high speed tracking amount</td><td>40</td><td>40</td></tr>
<tr><td>5E</td><td>AWB OUT HYS OFF</td><td>AWB outdoor hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>5F</td><td>AWB OUT B HYS</td><td>AWB outdoor hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>60</td><td>AWB MODE</td><td>AWB adjustment mode<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>00</td><td>Normal</td></tr><tr><td>D0</td><td>AWB adjustment mode</td></tr><tr><td>F1</td><td>All area tracking mode</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>61</td><td>AE REFL</td><td>Reference value (lower) for AE</td><td>00</td><td>00</td></tr>
<tr><td>62</td><td>AE REFH</td><td>Reference value (upper) for AE</td><td>1E</td><td>1E</td></tr>
<tr><td>63</td><td>AGC MIN</td><td>AGC MIN value (AGCREF value), IRIS level adjustment</td><td>E3</td><td></td></tr>
<tr><td>64</td><td>AE MIML</td><td>Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment</td><td>32</td><td></td></tr>
<tr><td>65</td><td>AE MAXL</td><td>High luminance intensity side limiter (lower)</td><td>80</td><td>80</td></tr>
<tr><td>66</td><td>IRIS OFFSET</td><td>Iris ROM table OPEN side off set</td><td>D0</td><td>D0</td></tr>
<tr><td>67</td><td>AE KEISU</td><td>Correction coefficient during detection weighting</td><td>00</td><td>00</td></tr>
<tr><td>68</td><td>AE FUNCTION</td><td>SW for turning each AE function ON and OFF</td><td>02</td><td>02</td></tr>
</table>

Table 7-2 (3).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response DOWN side	28	28
6B	JITEISU UP	Constant during loop response UP side	0D	0D
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYAKOU JITEISU	Constant during auto back light response	08	08
76	SABUN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	A0	A0
78	FUZZY RULE2	Correction amount 2 for auto back light	D0	D0
79	FUZZY RULE3	Correction amount 3 for auto back light	E0	E0
7A	FUZZY RULE4	Correction amount 4 for auto back light	B0	B0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	90	90
7D	FUZZY RULE7	Correction amount 7 for auto back light	B0	B0
7E	FUZZY RULE8	Correction amount 8 for auto back light	B8	B8
7F	FUZZY RULE9	Correction amount 9 for auto back light	98	98
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Iris limit value (lower)	42	42
82	IRIS MIN H	Iris limit value (upper)	02	02
83	DELTA SHUT GAIN	Shutter smoothing value setting	04	04
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower) Flange back adjustment	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE LIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	90	
8B	STEP ZERO SPAN	Frange back value 2	A0	
8C	ZOOM SPD FAST	Zoom speed (fast)	73	73
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	6A	6A
8E	ZS INIT SLOW	Zoom speed initial value (slow)	6A	6A
8F	ZS INIT FAST	Zoom speed initial value (fast)	6A	6A
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11
92	ZS L	Zoom servo coefficient L	04	04

Table 7-2 (4).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>93</td><td>ZP HYS</td><td>Zoom potential hysteresis</td><td>03</td><td>03</td></tr>
<tr><td>94</td><td>ZOOM SPD SLOW</td><td>Zoom speed (slow)</td><td>29</td><td>29</td></tr>
<tr><td>95</td><td>AF MD2THL</td><td>MODE2 THR</td><td>20</td><td>20</td></tr>
<tr><td>96</td><td>MAXCHG THR</td><td>MAX value renewal THR</td><td>1A</td><td>1A</td></tr>
<tr><td>97</td><td>ERR THRL</td><td>Wobbling width THR</td><td>18</td><td>18</td></tr>
<tr><td>98</td><td>WOB INTV</td><td>Wobbling second interval</td><td>04</td><td>04</td></tr>
<tr><td>99</td><td>ERRPOL THR</td><td>MODE2 error possible THR</td><td>13</td><td>13</td></tr>
<tr><td>9A</td><td>MAXCHK THR</td><td>MAX CHECK THR</td><td>12</td><td>12</td></tr>
<tr><td>9B</td><td>REWOB THR</td><td>Wobbling second THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9C</td><td>MODE2 INOUT</td><td>MODE2 speed switchover</td><td>8B</td><td>8B</td></tr>
<tr><td>9D</td><td>SMLWD THR</td><td>Small frame THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9E</td><td>ZOOM PULSE LIMIT</td><td>Maximum zoom pulse value</td><td>EE</td><td>EE</td></tr>
<tr><td>9F</td><td>ZOOM RIZE</td><td>Zoom rise minimum speed time</td><td>0A</td><td>0A</td></tr>
<tr><td>A0</td><td>FB CURVEPEAKL</td><td>Constant for flange back adjustment</td><td>F5</td><td>F5</td></tr>
<tr><td>A1</td><td>FB CURVEPEAKH</td><td>Constant for flange back adjustment</td><td>0B</td><td>0B</td></tr>
<tr><td>A2</td><td>FB ZOOMSL</td><td>Constant for flange back adjustment</td><td>02</td><td>02</td></tr>
<tr><td>A3</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>07</td><td>07</td></tr>
<tr><td>A4</td><td>LIMITREST WIDE</td><td>Zoom limiter WIDE side</td><td>14</td><td>14</td></tr>
<tr><td>A5</td><td>LIMITREST TELE</td><td>Zoom limiter TELE side</td><td>17</td><td>17</td></tr>
<tr><td>A6</td><td>FB PEAKTHR</td><td>Constant for flange back adjustment</td><td>FF</td><td>FF</td></tr>
<tr><td>A7</td><td>FB ZOOM SLOW</td><td>Constant for flange back adjustment</td><td>1C</td><td>1C</td></tr>
<tr><td>A8</td><td>DET IRIS ALT</td><td>Iris variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>A9</td><td>DET AGC ALT</td><td>AGC variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>AA</td><td>LIMIT INSURANCE</td><td>Focus limiter insurance value</td><td>02</td><td>02</td></tr>
<tr><td>AB</td><td>FOCUS MODE</td><td>Focus mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>08</td><td>Zoom, Focus fixed</td></tr>
<tr><td>00</td><td>Normal</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AC</td><td>LENS ADJ MODE</td><td>Flange back adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Nomal</td></tr>
<tr><td>01</td><td>Flange back adjustment</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AD</td><td>LENS EMRG</td><td>Lens emergency</td><td>00</td><td>00</td></tr>
<tr><td>AE</td><td>NTSC PAL/H DEF DELAY</td><td>DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay</td><td>21</td><td>21</td></tr>
<tr><td>AF</td><td>FT SW</td><td>DDS display mode switchover
<table>
<tr><th>Data</th><th>DDS display mode</th></tr>
<tr><td>00</td><td>Y sampling display</td></tr>
<tr><td>02</td><td>R–Y display</td></tr>
<tr><td>40</td><td>HALL data display</td></tr>
<tr><td>82</td><td>R ratio display</td></tr>
<tr><td>83</td><td>B ratio display</td></tr>
<tr><td>91</td><td>R, B ratio (M) display</td></tr>
<tr><td>B0</td><td>Focus step display</td></tr>
</table></td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (5).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
B0	CORE OTHER	CORE MODE DATA 13 byte	10	10
B1	CORE Y GAIN	CORE FIELD DATA 0 byte	3A	3A
B2	E LOW LIGHT START	Low light chroma suppress start point	30	30
B3				
B4	YAKEI LEVEL	YAKEI mode gain setting value	40	40
B5				
B6	ZOOM DROP 1	F-No. dropping (1) by Zoom lens	60	60
B7	ZOOM DROP 2	F-No. dropping (2) by Zoom lens	75	75
B8				
B9				
BA	AWB IN B HYS	Hysteresis of AWB indoor BLUE	04	04
BB	AWB IN R HYS	Hysteresis of AWB indoor RED	02	02
BC	AWB KAKE NORM R	ADD: 35 NORM R × 1000H	20	20
BD	AWB KAKE NORM B	ADD: 36 NORM B × 1000H	20	20
BE	MF STEP CHNGE	Coefficent of MODE 2 THR	46	46
BF	MD2 LOWCON SPD	Speed for Low-contrast at MODE 2	07	07
C0	MAX CHECK NG CNT	MAX CHECK NG count	14	14
C1	AF CONTROL FLAG		0E	0E
C2	AE Y THR	Low light AE fluctuation THR 1	28	28
C3	AE Y MIN	Low light AE fluctuation THR 2	20	20
C4	MD2 SPD	Focus speed at MODE 2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOW CON THR	THR 1 for judging Low-contrast at MODE 2	10	10
C7	LOW CON THR2	THR 2 for judging Low-contrast at MODE 2	20	20
C8~EF		Not used		
F0		Input column of the unit ID No., etc. Not related to unit operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 7-2 (6).

7-1-6. 6 Page, 1 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (1) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01 10 11	Camera adjustment mode (1), F page write protect released Normal Camera adjustment mode (2), F page write protect released
01	Camera adjustment switch **Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00 01 03 05 07 09 0B 0D 0F 11 13 15 17 1D	Normal IRIS OPEN, AGC HOLD IRIS CLOSE1, AGC HOLD IRIS CLOSE2, AGC MIN IRIS CLOSE3, AGC MAX ND0.5 SHUTTER (PAL=1/160, NTSC=1/190) ND0.8 SHUTTER (PAL=1/320, NTSC=1/380) AWB PRESET1: 3200K PRESET DATA take in WB 3200K PRESET: Indoor white balance mode AWB PRESET2: Preparation of 3200K PRESET DATA take in ZOOM HUNTING1 ZOOM SPDSLOW ZOOM HUNTING2 ZOOM SPDFAST AE FB adjustment mode (IRIS: OPEN, AGC: REF, SHUTTER: 1/100 (NTSC), 1/120 (PAL)) EEPROM PRE WRITE: Page F initial data write
05	Shutter mode	00 19	NTSC=1/60, PAL=1/50 1/2000
06	FOCUS limiter ON/OFF	00 01	FOCUS limiter ON (Normal) FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00 01	ZOOM limiter ON (Normal) ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00 01 02 03	Normal ZOOM speed SLOW ZOOM speed FAST ZOOM speed SUPER SLOW
09 ★	COMPLEATED FLAG	00 01	Camera Adjustment not completed Camera adjustment completed
11 ★	ROM VERSION	03	Camera micro processor ver3
0C ★	LENS INITIAL END	00 01	During the initial operation of the lens Lens initial operation completed

Addresses with ★ are exclusively for reading.

Table 7-3.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 7-4.

7-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-147 board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	NC	4	CAM SI
5	NC	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	NC	18	CAM Y

Table 7-5.

7-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① **B (b)**	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

7-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-67 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑤ and ⑧ of CN901
Specified value	4.92 ± 0.15 Vdc
D4V check	
Measurement point	Pin ④ of CN901
Specified value	3.98 ± 0.15 Vdc
CAM 5V check	
Measurement point	Pins ⑦ and ⑩ of CN901
Specified value	$4.86^{+0.15}_{-0.11}$ Vdc
CAM 15V check	
Measurement point	Pin ⑫ of CN901
Specified value	15.05 ± 0.4 Vdc
CAM -9V check	
Measurement point	Pin ⑨ of CN901
Specified value	-8.5 ± 0.4 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Check that the data of page: 6, address: 09 is 00.
(Display indicating that page F data can be initialized)
2) Check that the data of page: 6, address: 01 is 00.
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Page F data initialization execution.
The data of all addresses of page F will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
(Displays that the initialization of page F data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
(Releases the page F data initialization mode)
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Address	Data
00 (ID)	3E
0A (LOW LIGHT CS)	C0
11 (CORE EFFECT)	A0
12 (CORE MAT R)	24
14 (CORE BURST LEVEL)	38
15 (CORE CHROMA DLY)	02
17 (CORE VHAPCN)	17
5C (AWB DELAY TM)	0C
68 (AE FUNCTION)	02
6A (JITEISU DOWN)	28
6B (JITEISU UP)	0D
8C (ZOOM SPD FAST)	73
8D (ZOOM SPD SUPER)	6A
8E (ZS INIT SLOW)	6A
8F (ZS INIT FAST)	6A
94 (ZOOM SPD SLOW)	29
9E (ZOOM PULSE UNIT)	EE
A2 (FB ZOOM SL)	02
A3 (FB ZOOM SH)	07
AE (NTSC PAL/H DEF DELAY)	21
B0 (CORE OTHER)	10
B1 (CORE Y GAIN)	3A
B2 (E LOW LIGHT START)	30
C0 (MAX CHK NGCNT)	14

[Distinguishing the Camera Micro Computer (IC709) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.3	CXP80624-434R	03

4. 28 MHz Original Oscillation Adjustment (VC-147 board)

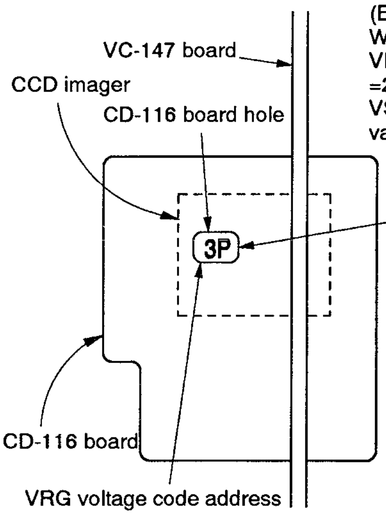
Subject	Not required
Measurement Point	Pin ⑰ of IC706 (14 MHz)
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14187500 ± 71 Hz

Adjusting method:
1) Use CT801 to adjust the oscillation frequency to 14187500 ± 71 Hz.

5. V SUB Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =14.0 ± 0.1 Vdc.

VRG voltage code address

Code address	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

VSUB voltage code address (Note)

Code address	Voltage (Vdc)
E	9.5
F	10.0
G	10.5
H	11.0
J	11.5
K	12.0
L	12.5
M	13.0
N	13.5
P	14.0
Q	14.5
R	15.0
S	15.5
T	16.0
U	16.5
V	17.0
W	17.5
X	18.0
Y	18.5
Z	19.0

Fig. 7-7.

Note: This VSUB voltage code address can not be used for other models.

6. VRG Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.
1. When the CCD imager has been replaced
2. The ocassion of exchaning a camera micro processor or EEPROM (IC712).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of VC-147 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

Processing after completing adjustments
1) If the CCD imager has been replaced, remove the old correction data label attached on the shield case (UPPER) of VC-147 board.

8. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to W_2.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and set to W_1.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and set to K_1.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and set to K_2.
12) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate X_1' using the following equations (decimal notation calculation).
    $A'=W_2'+K_1'-W_1'-K_2'$ ··························Equation 1
    $B'=W_1'-K_1'$ ··Equation 2
    $X_1'=\frac{2048+(48\times A')-(16\times B')}{A'}$ ················Equation 3
14) Convert X_1' to hexadecimal notation, and obtain X_1.
    (Round off to one decimal place)
15) Set data: X_1 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS CLOSE mode setting)
19) Read the DDS display data, and set to W_0. If W_0 lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert W_0 to hexadecimal notation, and obtain W_0'.
21) Calculate X_2' using the following equations (decimal notation calculation).
    $C'=W_0'-B'-51$ ·····································Equation 4
    $X_2'=\frac{(128-B')\times(X_1'-48)+48\times C'}{C'}$ ···········Equation 5
    (X_1' and B' are values obtained from equations 2 and3)
22) Convert X_2' to hexadecimal notation and obtain X_2.
    (Round off to one decimal place)
23) Set data X_2 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

9. Flange Back Adjustment

Subject	Chart for flange back adjustment (1998 ± 5mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H), 8A (STEP ZERO), 8B (STEP ZERO SPAN)

Adjusting method:

1) Turn the auto focus off. (Note 1)
2) Adjust the focus. (Note 1)
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Check that the page: F, address: 86 to 8B data is at the initial value. (Refer to Table 7-2. "Page F address list")
7) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
8) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Note 1: Use the adjustment remote control unit.
(HOLD switch: OFF)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

10. Flange Back Check

Subject	Siemens star (2m (or 1.4m) from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	$D_2=D_1 \pm 5$

Checking method:

1) Set data: 01 to page: 6, address: 00. (Camera adjustment mode)
2) Set data: B0 to page: F, address: AF. (Focus step display mode)
3) Place the Siemens star 2m (or 1.4m) from the front of the lens.
4) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image displayed on the monitor TV screen.
5) Turn off the auto-focus. (Note 1)
6) Shoot the Siemens star with the zoom TELE end.
7) Adjust the focus. (Note 1)
8) Adjust to the zoom WIDE end.
9) Read the focus step value (4 digits) displayed on the TV monitor, and take the value as D_1.
10) Adjust the focus. (Note 1)
    Read the focus step value here, and take the value as D_2.
11) Check that $D_2=D_1 \pm 5$.

Note 1: Use the adjustment remote control unit.
(HOLD switch: OFF)

Process after checking

1) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.

11. SYNC Level Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	A=150 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

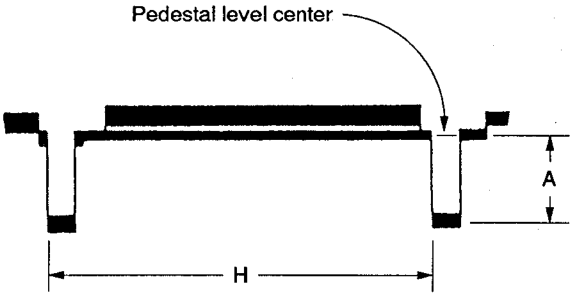


Fig. 7-8.

12. BURST Level Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	A=150 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

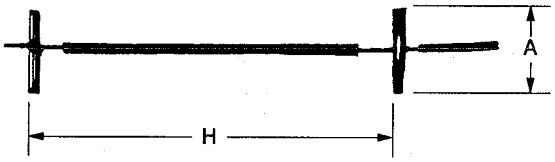


Fig. 7-9.

13. A/D Offset Adjustment

Subject	Not required
Measurement Point	DDS display on the EVF or the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	46 to 47

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
   (Set the data of address 0C to the maximum value satisfying the specification.)
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Turn the main power supply (6.3V) off.

14. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (CS SL)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

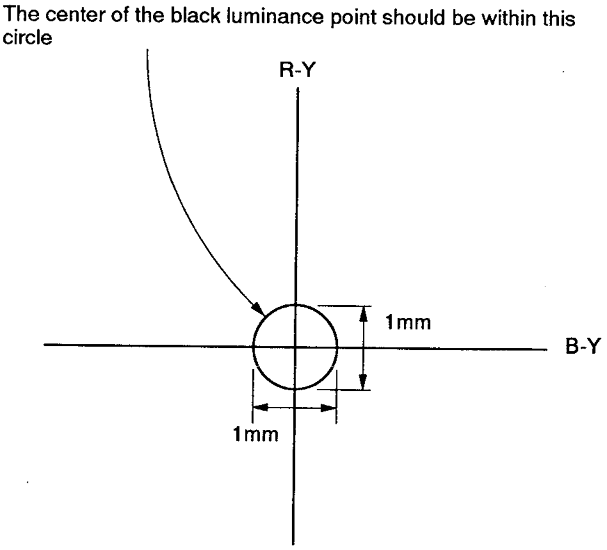

The center of the black luminance point should be within this circle
R-Y
1mm
B-Y
1mm

Fig. 7-10.

15. Picture Frame Setting

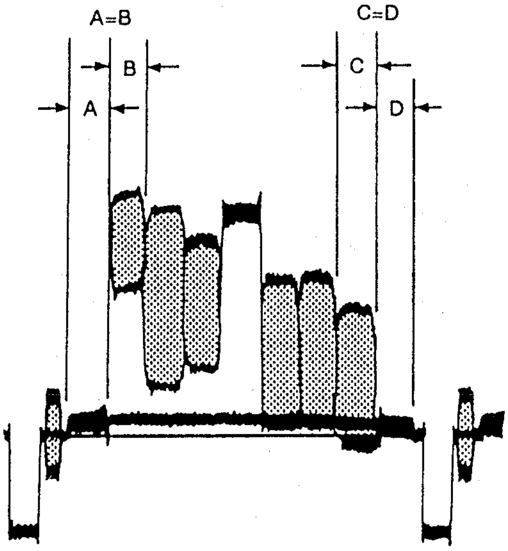
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:
1) Turn the auto focus off. (Note 1)
2) Adjust the focus. (Note 1)
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

Note 1: Use the adjustment remote control unit.
(HOLD switch: OFF)

Check on the oscilloscope

1. horizontal period



2. Vertical period

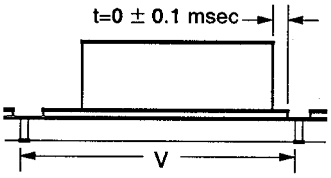
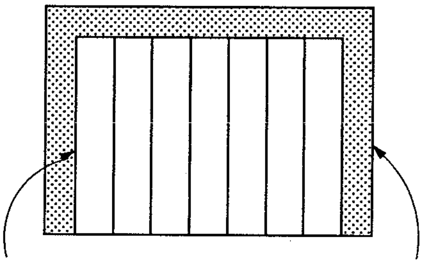


Fig. 7-11.

Check on the TV monitor



Color bar chart picture frame TV monitor picture frame

Fig. 7-12.

16. IRIS Level Adjustment (VC-147 board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

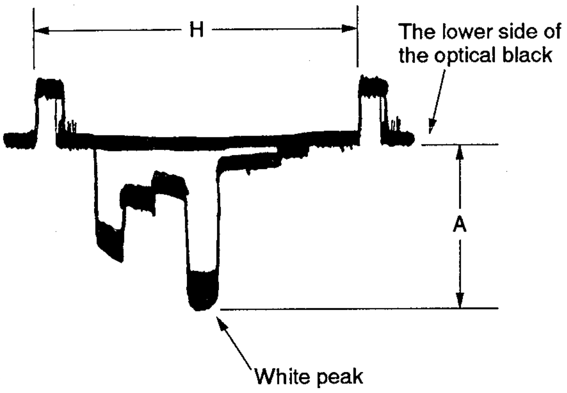


Fig. 7-13.

17. MAX GAIN Adjustment (VC-147 board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

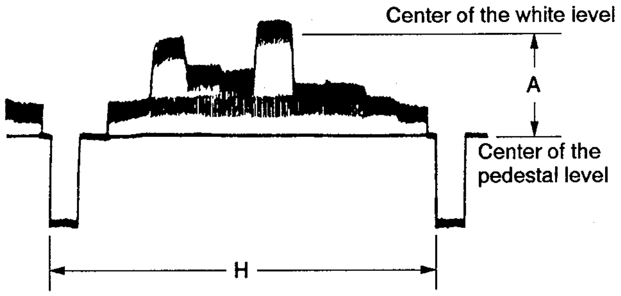


Fig. 7-14.

18. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and set to D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
7) Read the DDS display data and set to D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.5 shutter mode)

19. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1mm and whose center is the principle point

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

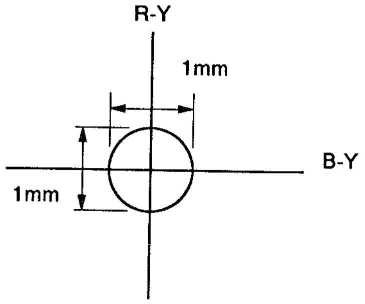


Fig. 7-15.

20. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B–Y GAIN), 19 (CORE R–Y GAIN), 1A (CORE R–Y HUE), 1B (CORE B–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01 and press the PAUSE button of the adjustment remote control unit.
   (Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

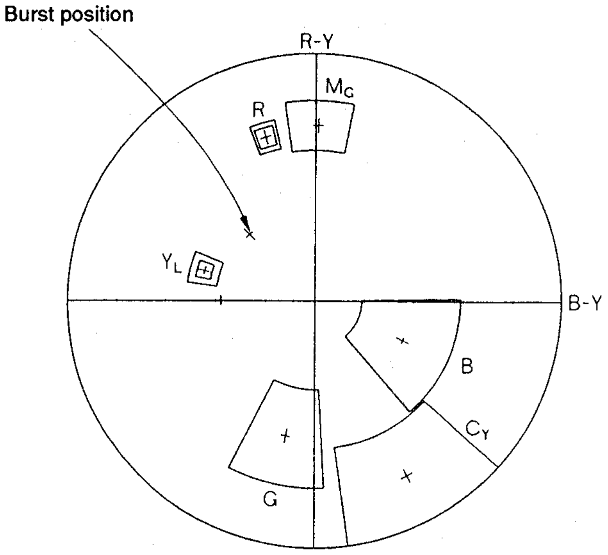


Fig. 7-16.

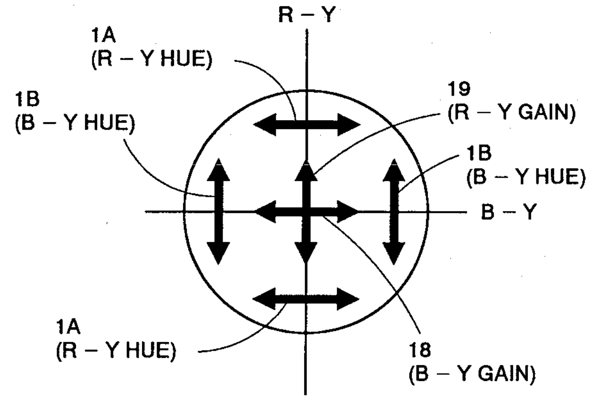


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

21. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 30 (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
   (Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00, and wait at least 2 seconds.
   (Camera adjustment mode 2 setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
   (Auto white balance preset adjustment completion display)

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

22. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2980 ± 40 B ratio 5D80 ± 40

Note: Check that "Auto White Balance Preset Adjustment" have been completed.

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
4) Set data: 82 to page: F, address: AF.
   (R ratio display mode setting)
5) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2980 ± 40.
6) Press the PAUSE button of the adjusting remote control unit.
7) Set data: 83 to page: F, address: AF.
   (B ratio display mode setting)
8) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5D80 ± 40.
9) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

23. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 7-18. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
   (Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance high speed tracking mode setting)
7) Set data: 91 to page: F, address: AF (R, B ratio (M) display mode setting), and check that the top 2 digits and bottom 2 digits of the DDS display are 3D to 43. Or check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
   (Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
    (Auto white balance outdoor mode check)

Processing after completing adjustments

1) Set data: 0C to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance fast tracking mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

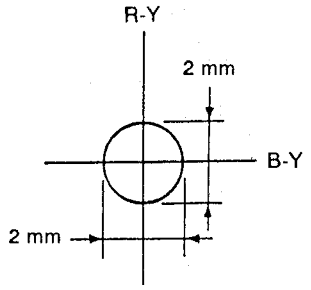


Fig. 7-18. A

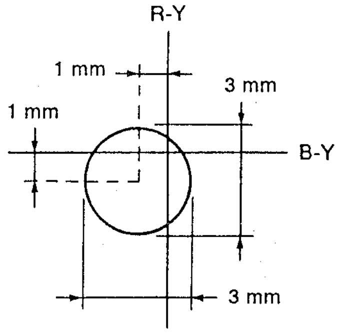


Fig. 7-18. B

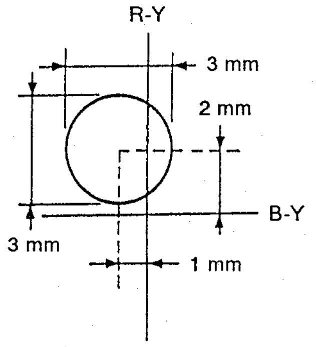


Fig. 7-18. C

24. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note 1: Check that position that was set in the color bar chart picture frame "15. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   2. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Check that the colors on the monitor display at the color modulation stop mode have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y data display mode setting)
6) Read the average value of the DDS display data (Note 2), and set to Y_1.
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Select page: F and read the average value of the DDS display data (Note 2), and set to R_1.
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: B6 to page: 1, address: E7.
11) Select page: F and read the average value of the DDS display data (Note 2), and set to Y_2.
12) Specifying the Red position
    1. Set data: 59 to page: 1, address: E6.
    2. Set data: 6D to page: 1, address: E7.
13) Select page: F and read the average value of the DDS display data (Note 2), and set to R_2.
14) Convert Y_1, R_1, Y_2, R_2 to decimal notation to obtain Y_1', R_1', Y_2' and R_2'.
    (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table")
15) Calculate X_1' from the following equation (decimal notation calculation).
    $X_1'=Y_2'-Y_1'$
16) Calculate D_{3D} from the following table
    (D_{3D} is hexadecimal notation)

X_1' value	D_{3D}
$-1 \leqq X_1' \leqq 1$	F0
$X_1'>1$	F1
$X_1'<-1$	FF

17) Set data: D_{3D} to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
18) Calculate X_2' from the following equation (decimal notation calculation).
    $X_2'=R_2'-R_1'$
19) Calculate D_{3E} from the following table.

X_2' value	D_{3E}
$X_2' \geqq 0$	00
$0>X_2' \geqq -1$	01
$-1>X_2'$	02

20) Set data: D_{3E} to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 38 to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y data display mode)
4) Turn the main power supply (6.3V) off.

Note 2: As the R-Y data and B-Y data are displayed alternatively, it will be difficult to read the R-Y data. Record this data on a tape, and perform frame advancing playback so that only the R-Y data is read.
(Example)
If the frame advancing playback is performed, the following will be displayed.
$\underline{81}\rightarrow 7A\rightarrow \underline{82}\rightarrow 7A\rightarrow \underline{80}\rightarrow 7A\rightarrow \underline{81}\rightarrow 7C\rightarrow \underline{81}\rightarrow 79$
As the R-Y data is above 80, and the B-Y data is below 7F, the data which is underlined is the R-Y data. If the average value is calculated, the R-Y data will become 81.

25. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=680 ± 40 mV SYNC level=300 ± 20 mV BURST level=300 ± 30 mVp-p

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

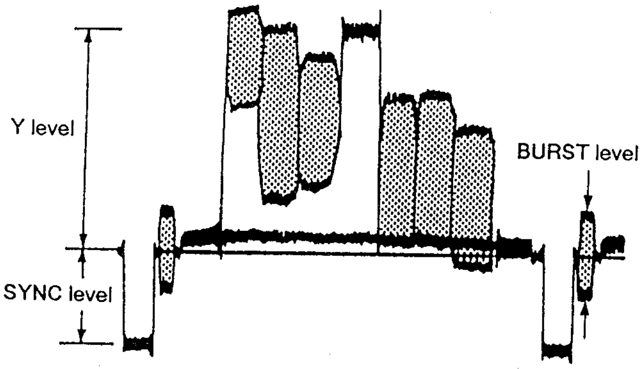


Fig. 7-19.

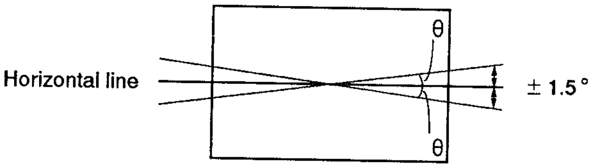
7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

7-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-21.

Adjusting method:

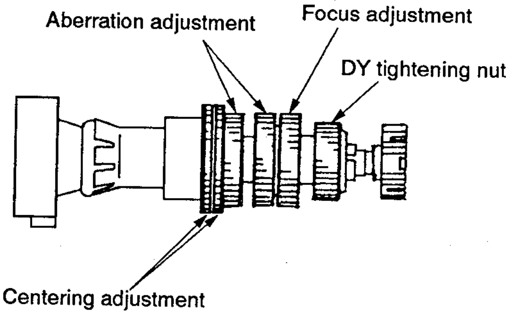
1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
(Do not tighten it too tightly.)



θ
Horizontal line
± 1.5 °
θ

Specified value: The image should be within ± 1.5 ° of the horizontal line.

Fig. 7-21.



Aberration adjustment
Focus adjustment
DY tightening nut
Centering adjustment

Fig. 7-22.

7-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-23.

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)

Note: As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

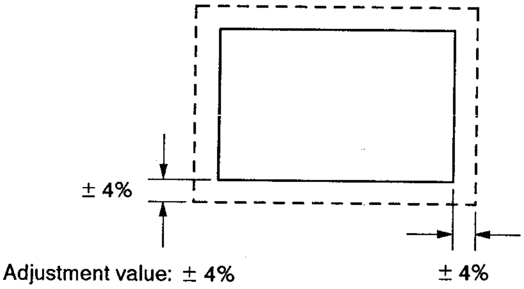


Fig. 7-23.

7-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

7-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 7-24.

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

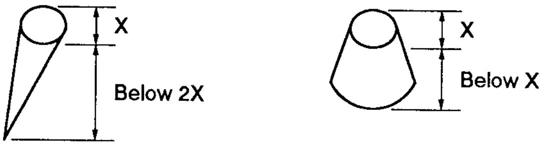


Fig. 7-24.

7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.60 ± 0.05 Vdc

Adjusting method:

1) Adjust to 2.60 ± 0.05 Vdc using RV501.

7-3-6. Horizontal Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	C504
Specified Value	6 ± 2%

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-26.)

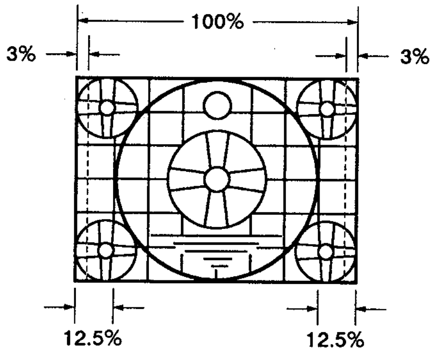
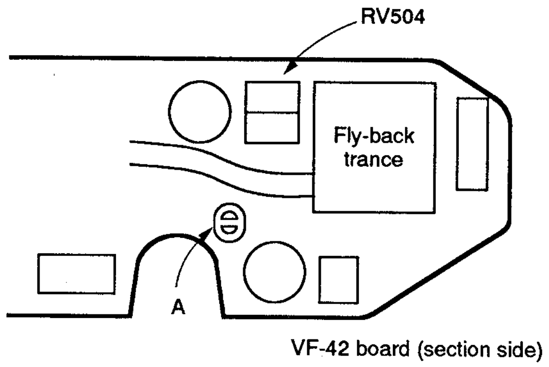


Fig. 7-25.



Section A	Size H
Open	Small
Short	Big

Fig. 7-26.

7-3-7. Vertical Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

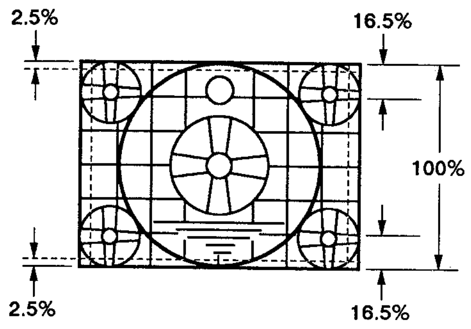


Fig. 7-27.

7-3-8. Brightness, Contrast Adjustments (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

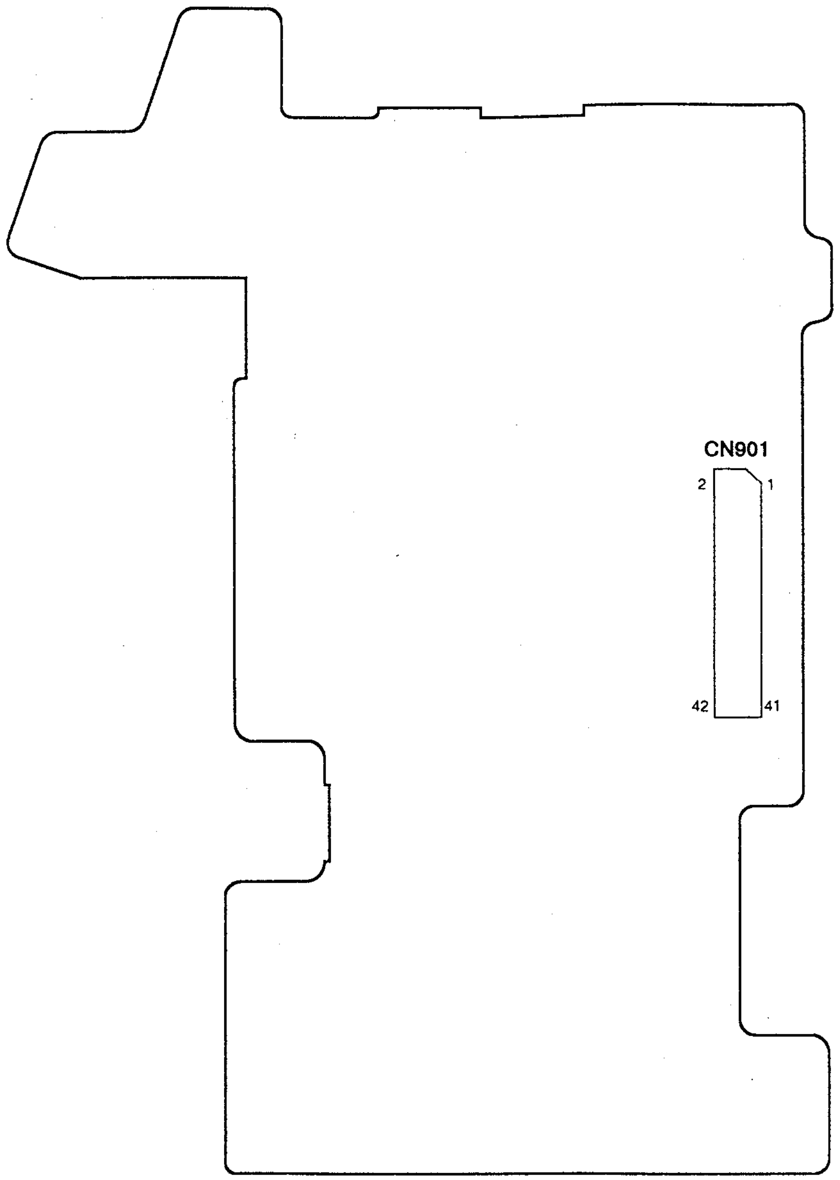
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

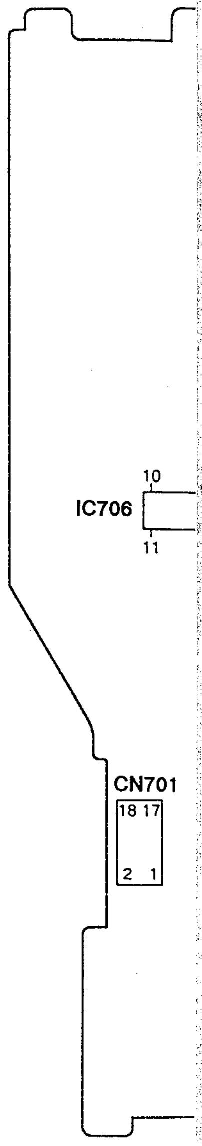
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [7-3-8. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

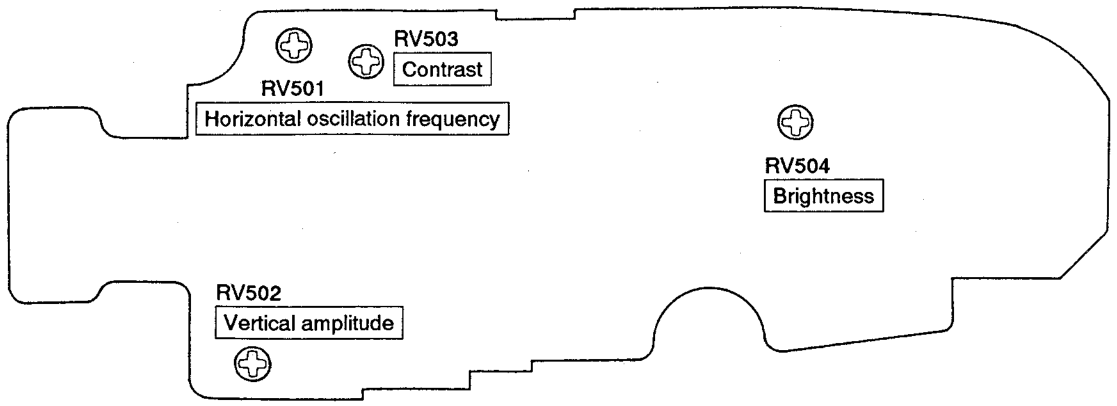
DD-67 BOARD (COMPONENT SIDE)



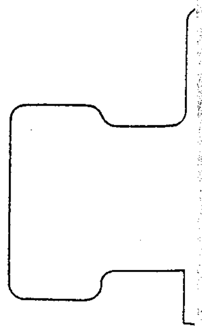
VC-147 BOARD



VF-42 BOARD (COMPONENT SIDE)



VF-42 BOARD



42 board)

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on over scan

100%

ions

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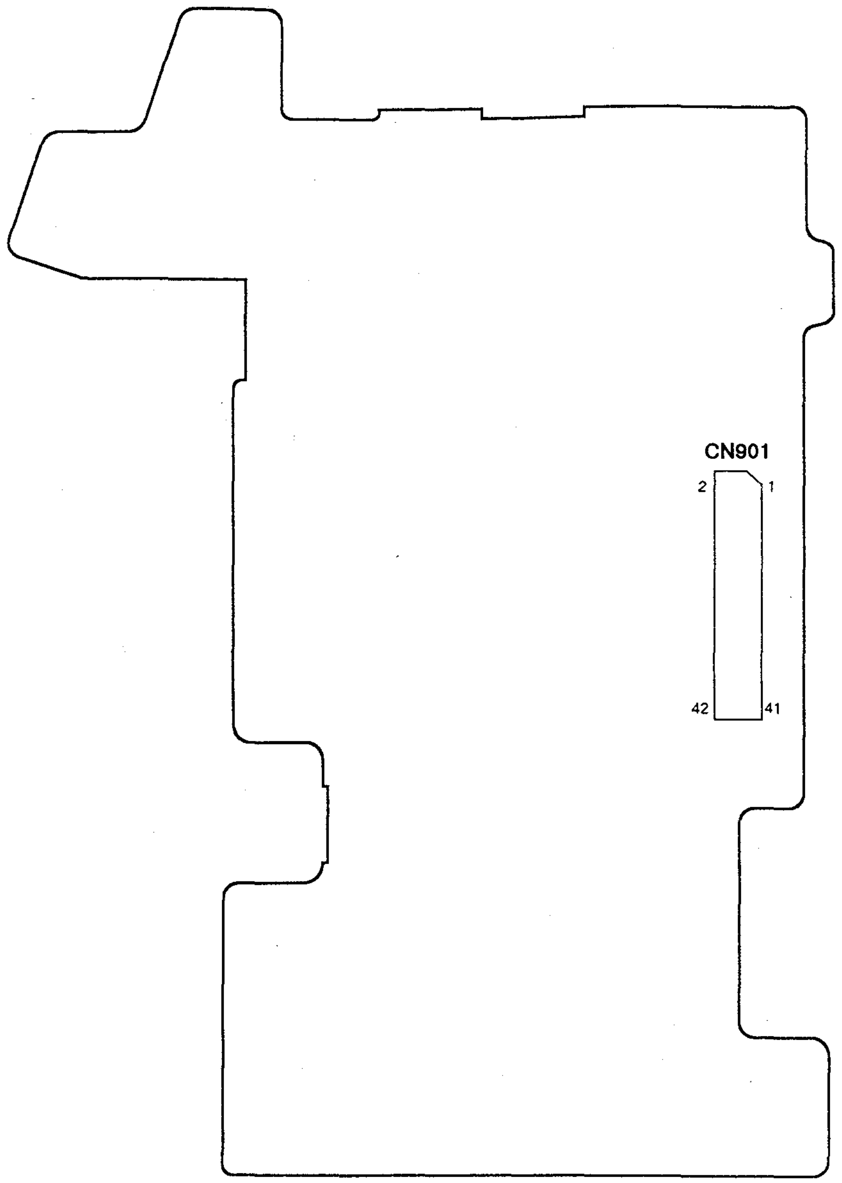
till the cross
le. The dark
st section and
le cannot be

tude,

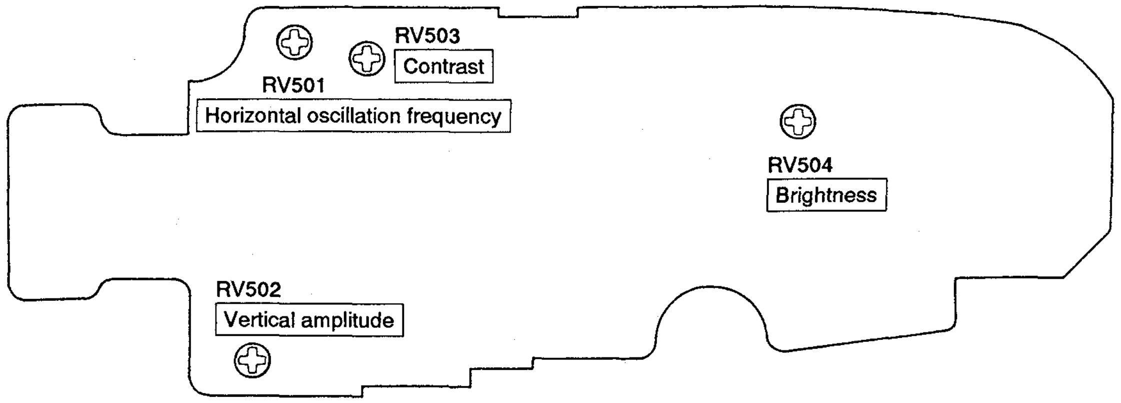
-3-7. Vertical
cified values.
again. In this
nts] again.
ague, perform
Adjustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

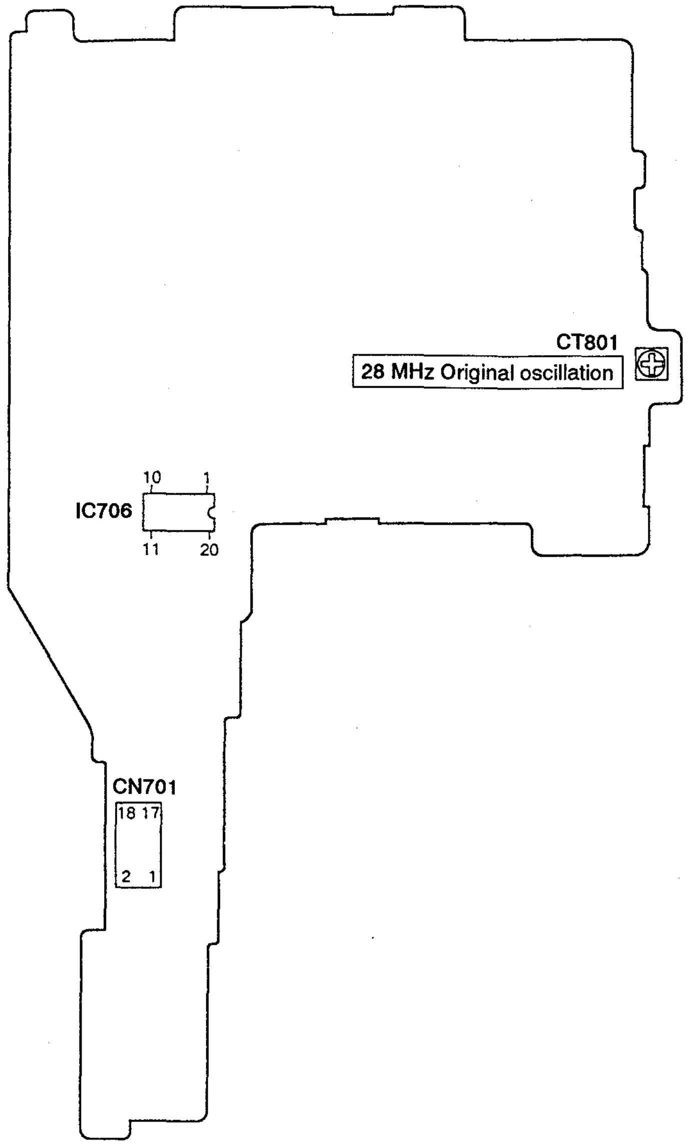
DD-67 BOARD (COMPONENT SIDE)


CN901
2
1
42
41

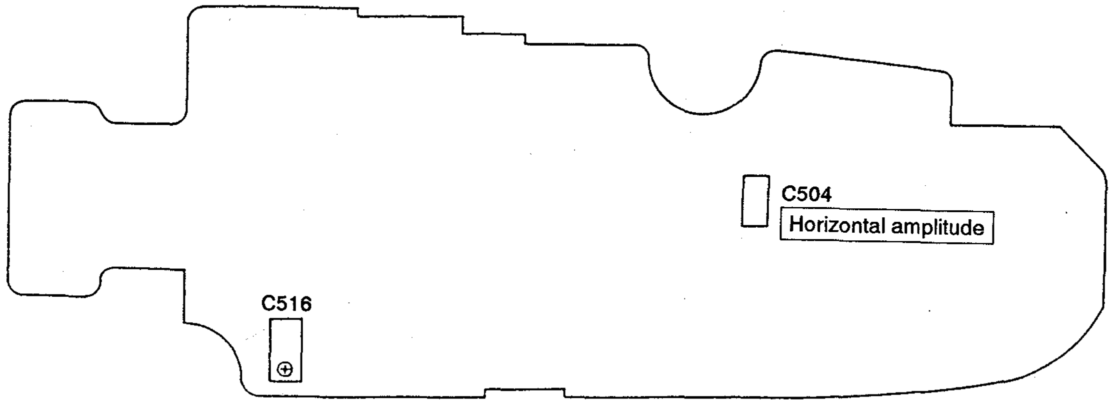
VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

VC-147 BOARD (CONDUCTOR SIDE)


CT801
28 MHz Original oscillation
IC706
10
1
11
20
CN701
18 17
2 1

VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

42 board)

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on over scan

100%

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-3-7. Vertical
cified values.
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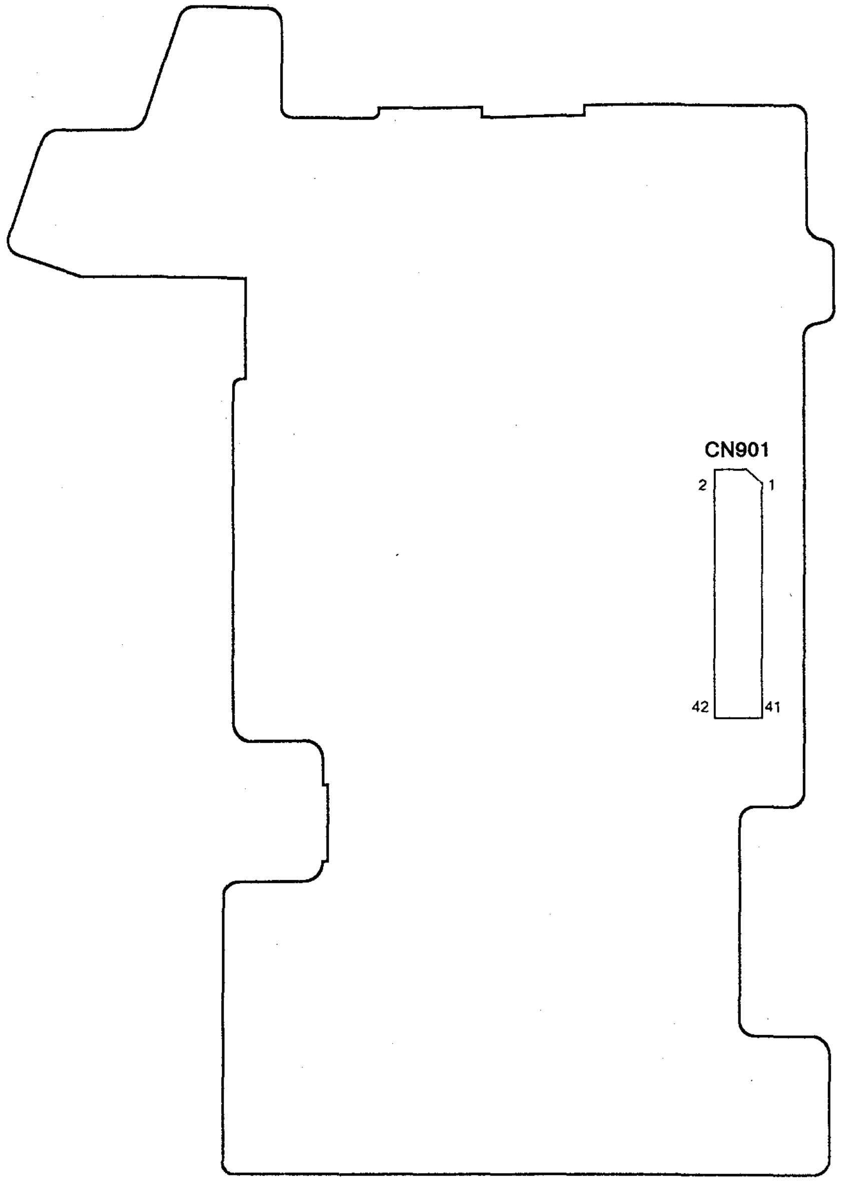
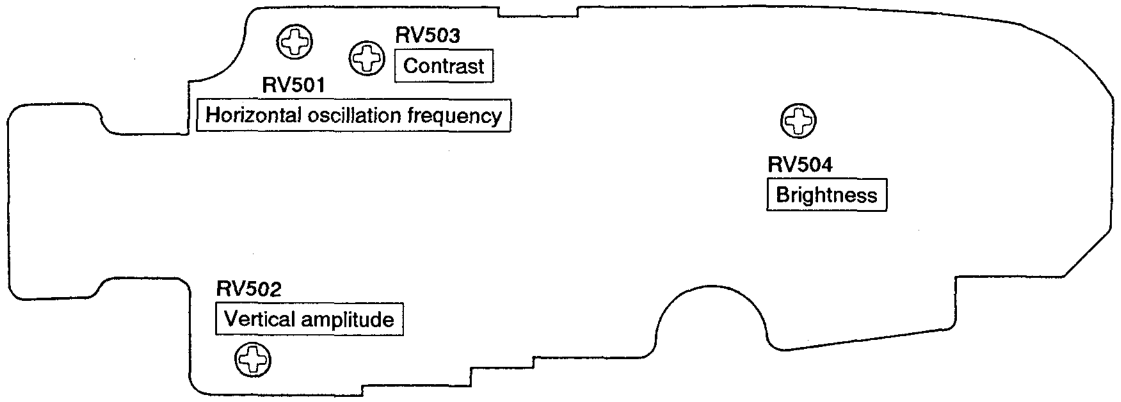
djustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

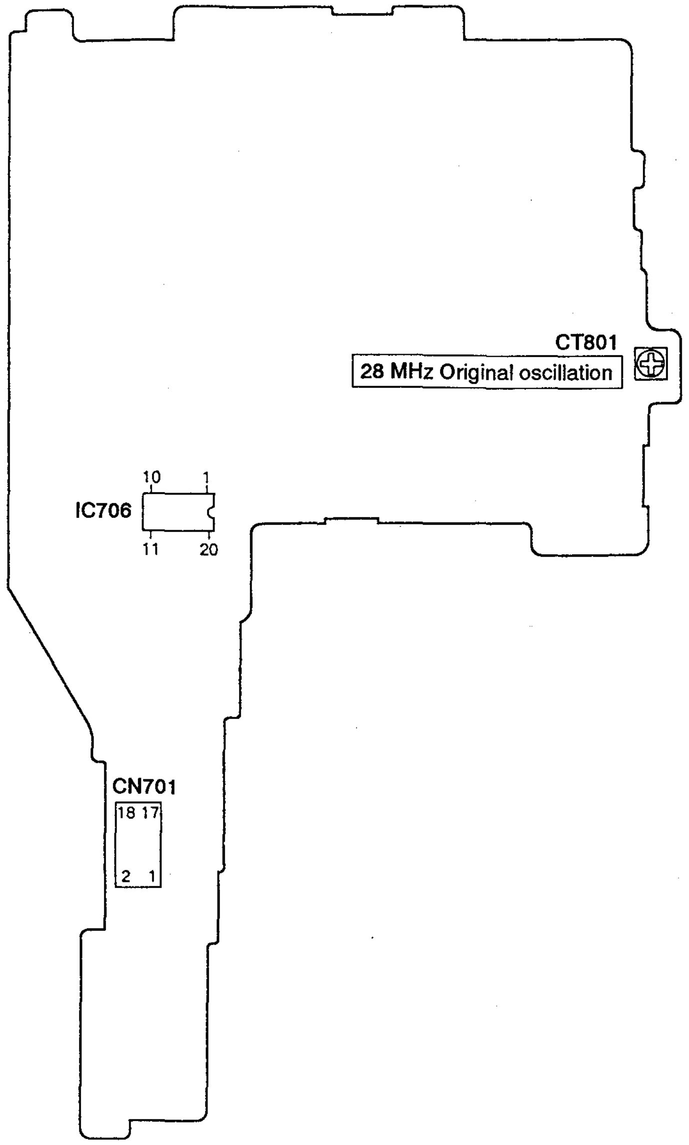
DD-67 BOARD (COMPONENT SIDE)


CN901
2
1
42
41

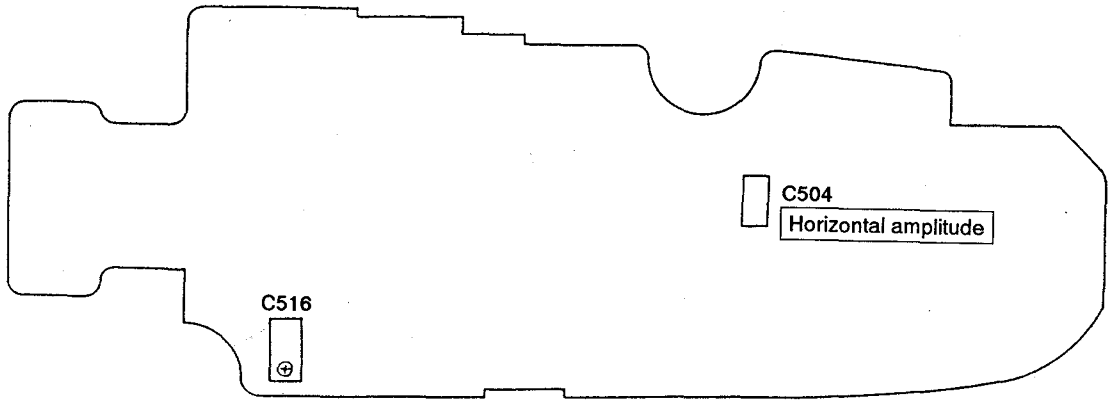
VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

VC-147 BOARD (CONDUCTOR SIDE)


CT801
28 MHz Original oscillation
IC706
10
1
11
20
CN701
18 17
2 1

VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

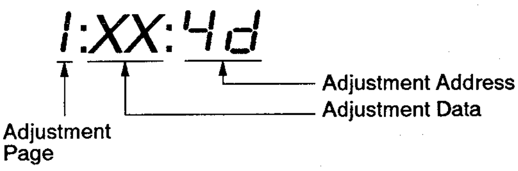
SECTION 8
MECHANICAL SECTION ADJUSTMENTS

For Mechanical Adjustments
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

8-1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

[Setting Method]
1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)
5) Set to the HOLD OFF side in order to set the normal mode.



8-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: VS-116 board CN002 pin ③ (PB RF)
   CH2: VS-116 board CN002 pin ④ (SWP)
3) Play back the tracking alignment tape (WR5-1CP: 8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet side. (Refer to Fig. 8-1 and 8-2)
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Ⅳ (A Mechanism).

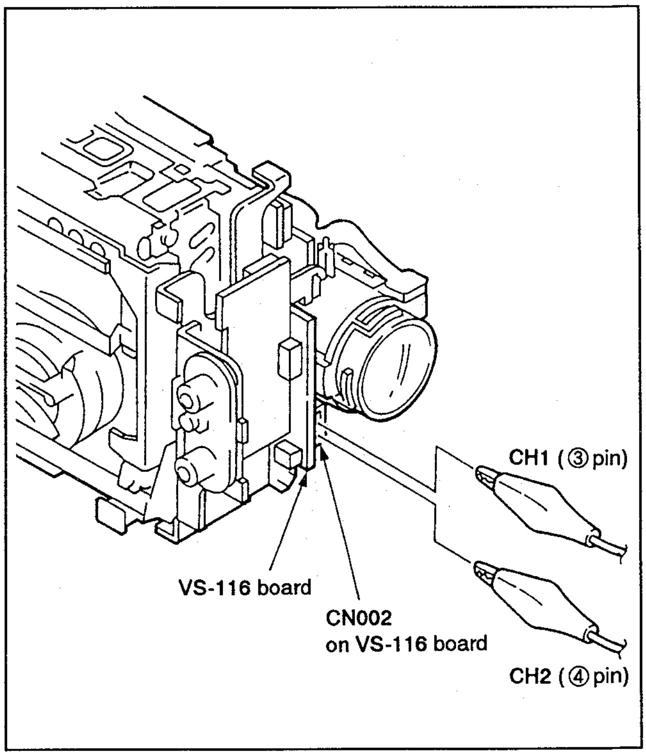


Fig.8-1.

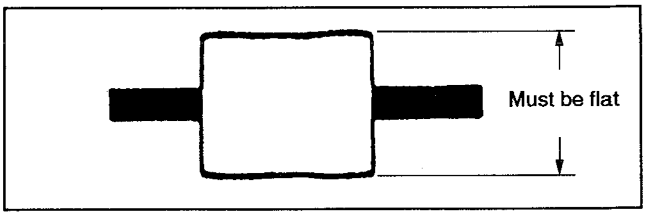


Fig.8-2.

SECTION 9
VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 230.

9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

9-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1CP)
    Part Code: 8-967-995-07
    For video frequency characteristics adjustment (WR5-6C)
    Part Code: 8-967-995-17
    For checking operations
    (WR5-4CL)[Note 1]
    Part Code: 8-967-995-56
    (WR5-5CSP)[Note 2]
    Part Code: 8-967-995-47
    Note: The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
12) Remote control unit for adjustment (J-6082-053-B)
13) DD-67 board extension cord (42P, 0.8 mm)
    Part Code: J-6082-195-A
14) AU-171 board, Cabinet (R) extension cord (20P, 0.8 mm)
    Part Code: J-6082-196-A
15) Mecha deck extension cord (30P, 0.8 mm)
    Part Code: J-6082-167-A

9-1-2. Connecting the equipments

Unless specified otherwise, connect the measuring instruments as shown in Fig. 9-1 and perform the adjustments.

- Camera/player power switch ········Position of the player
- Connect the adjusting remote control unit to the remote terminal (DD-67 board CN902).

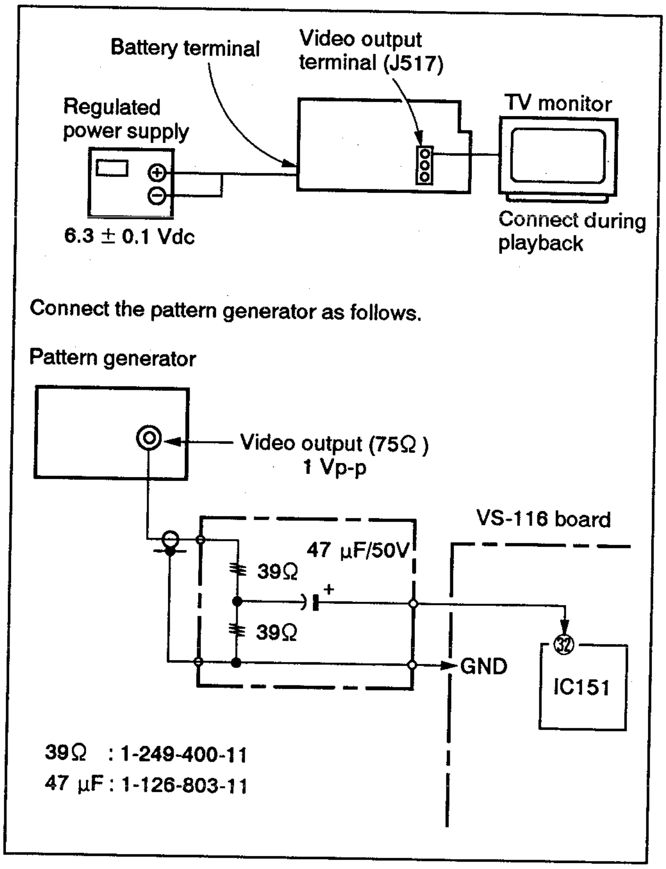

Battery terminal
Video output terminal (J517)
Regulated power supply
TV monitor
6.3 ± 0.1 Vdc
Connect during playback
Connect the pattern generator as follows.
Pattern generator
Video output (75Ω) 1 Vp-p
VS-116 board
47 μF/50V
39Ω
+
39Ω
GND
32
IC151
39Ω : 1-249-400-11
47 μF : 1-126-803-11

Fig. 9-1.

9-1-3. How to Set the REC Mode

1. REC key forbidden accept mode cancel
   1. Connect the adjustment remote controller to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to AF. (REC key forbidden accept mode cancel)
   6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2. REC mode setting
   1. Connect the collector of Q200 on the VS-116 board and GND with a jumper wire. (CCD delay (IC154) active mode setting)
   2. Turn on the HOLD switch of the adjustment remote controller.
   3. Select the page: 1 address: A3, and set data to 01.
   4. Select the page: 1 address: 0B, and set data to C8. (Line input mode setting)
   5. Turn off the HOLD switch of the adjustment remote controller.
   6. Press REC buttons of the adjustment remote controller.
   7. Remove the jumper wire and perform "3. Procedure after completed the adjustment", after completing adjustment.

3. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbidden accept mode after adjustment.
   1. Connect the adjustment remoter controller to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on HOLD switch of the adjustment remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to AE. (Setting of the REC key forbidden accept mode)
   6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

9-1-4. Precautions upon adjustment

The EVF (Electronic viewfinder) is not required for adjusting the video section.
Remove the following connector when removing the EVF section.

1. VS-116 board CN102 (6 PIN)

The front panel section assembly is required for adjusting the video section. Remove the following connectors when removing the front panel section assembly.

1. AU-171 board CN601 (5 PIN)

The cabinet (R) is required for adjusting the video section. Use the extension cord (J-6082-196-A) when adjusting the video section.

9-1-5. Set-up during Adjustment

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ㉜ of IC151 on the VS-116 board, and check that the amplitude of the sync signal of the video signal is approximately 0.15V, the amplitude of the video section is approximately 0.35V, the amplitude of the burst signal is approximately 0.15V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 9-2.

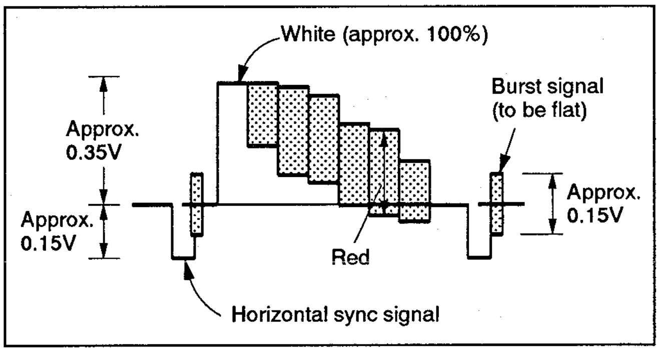


Fig. 9-2. Color Bar Signal of the Pattern Generator

9-1-6. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6C	L	MP	LP	RF sweep 0 to 10 MHz Marker 1, 3.58, 5.5, 7 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. } Color bar section 14 kHz 20 sec. Repeated 4 times 1 kHz 4 minutes	Checking operations
Operation check (LP mode) WR5-4CL	L	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		

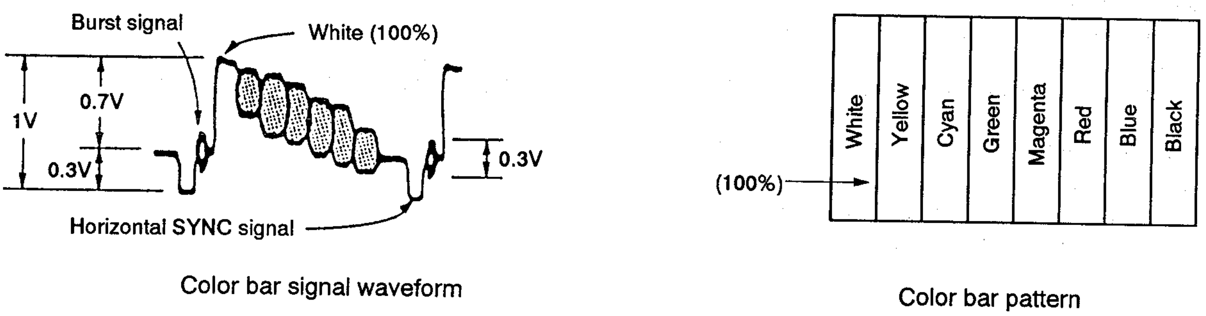
Note: Recording mode
L ······· Conventional mode
E ······· hi8 (hi band) mode

Tape type
MP····· Particle type metal tape
ME····· Evaporated type metal tape

Table 9-1.

Fig. 9-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video input/output terminal (Terminated at 75 Ω)



Color bar signal waveform

Color bar pattern

Fig. 9-3. Color Bar Signals of the Alignment Tape

9-1-7. Output Level and Impedance

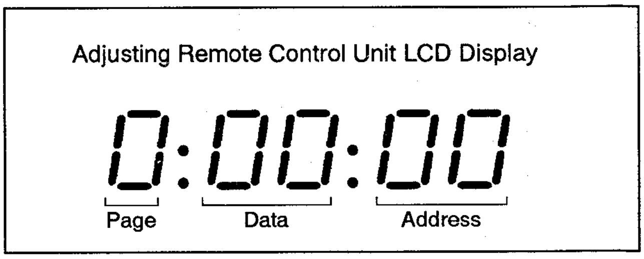
Video output : Phono jack
Output signal: 1 Vp-p, 75Ω
unbalanced, sync negative
Audio output : Phono jack
Specified output: –7.5 dBs
(at load impedance 47 kΩ)
Impedance less than 2.2 kΩ

9-1-8. Service Mode

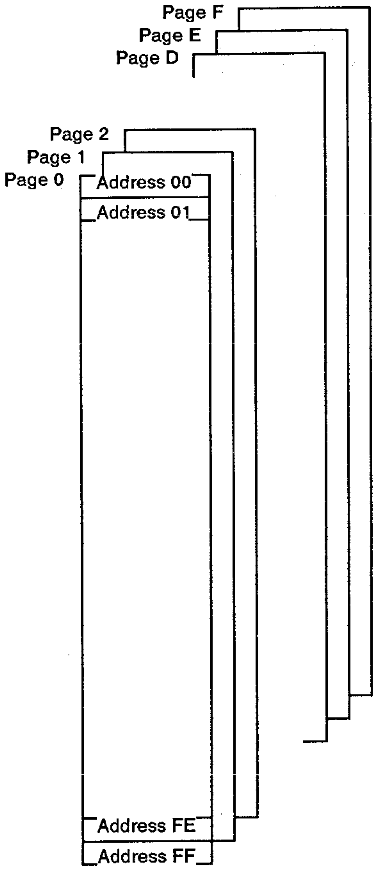
1. Setting the Service mode

The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

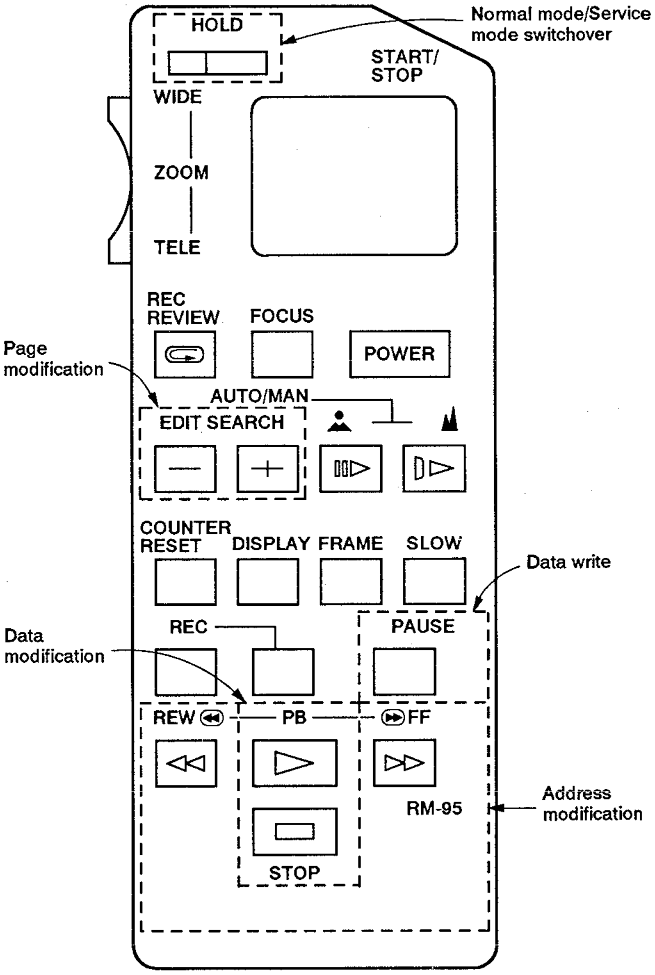
The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).


Adjusting Remote Control Unit LCD Display
0:00:00
Page
Data
Address

(1) Service LANC memory map

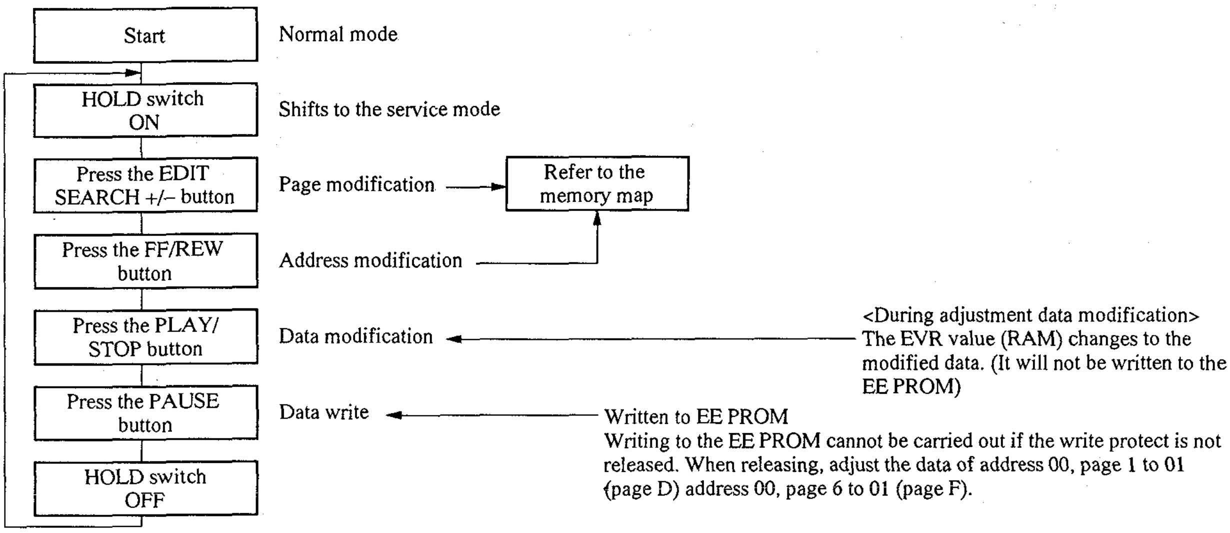

Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Adjusting remote control unit RM-95 (J-6082-053-B)


HOLD
Normal mode/Service mode switchover
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
REC
PAUSE
Data modification
REW
PB
FF
RM-95
Address modification
STOP

Page	Page allocation	Description
0	Not used	
1	Mode Control RAM, I/O	RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM.
2~4	Mechanical Control RAM, I/O	RAM and I/O memory area of the mechanical controller.
5	Not used	
6~8	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
9	Not used	
A	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
B, C	Not used	
D	VTR EE-PROM	ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is turned off. Releasing protect is required for changing data.
E	Not used	
F	Camera EE-PROM	ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is turned off.

(2) Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 1 to 01 (page D) address 00, page 6 to 01 (page F).

Command Name	Command Function	Normal LANC command
Page Up	Page +1	Edit Search +
Page Down	Page –1	Edit Search –
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address –1	Rewind
Data Up	Data +1	Play Back
Data Down	Data –1	Stop
Store	Write the data to the EE PROM. RAM	Pause

2. Types of Self-diagnostic Feature

MODE		Contents
TEST	Camera adjustment	Refer to Camera Adjustment
	Switching position adjustment	Refer to each adjustment page
	Battery DOWN adjustment	
	Video, Audio adjustment	
ADJUST	Pass Adjustment track shift	When adjusting tape pass, set this mode and shift the tracking.
	Emergency STOP inhibition	Detection of emergency is inhibited. This allows the following items. • Power is not turned off when the battery is ended. • SP/LP is not automatically distinguished. • Emergence is not detected except for TOP/END detection of the TAPE.
	Read of emergence code	The following functions are added to the emergency display function currently in use. ① The lithium battery is not required because to memorize into EE-PROM is allowed. ② The first emergency and the last emergency are memorized. ③ The mode when the emergency is generated is memorized, in addition to the emergency contents.
	Motor single check	Rotating in forward direction, reverse direction, stopping of each motor can be separately controlled. • Drum motor • Capstan motor • Loading motor
	Function switch check	The acceptance of the function switch of the unit can be confirmed by designating an address. On the contrary, RM-95 can command the substitution for the function switch of the unit.
	Mechanical switch check	The contents of the mechanical switch and the mode switch can be confirmed.
	Sensor check	The following sensor is input by performing A/D converting, and the A/D converted value can be confirmed. TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction, DEW sensor.
	Reception contents check of wireless remote control	The received code contents of the remote control code can be confirmed.

3. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Write protect release

4. Page F Write Protect

Release/set the page F write protect.

Page 6	Address 00

Data	Function
10	Normal (Write protect condition)
01	Write protect release

5. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover 5 minutes pause release inhibition Power off inhibition • release by battery end
02	Test mode 2 1'CH frequency response adjustment (Not used) SP/LP automatic distinction inhibition, manual switchover
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

6. Emergency code

Troubles (errors) can be checked.

Page D	Address 06

First emergency code

……The first error code generated

Page D	Address 07

Last emergency code

…… The last error code generated (this data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after resetting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	DRUM FG error during drum start up
06	DRUM PG error during drum start up
07	DRUM FG error during drum regular condition
08	DRUM PG error during drum regular condition
09	DRUM Phase error during drum regular

7. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08

First emergency mode
……The operation mode when the first error is generated

Page D	Address 09

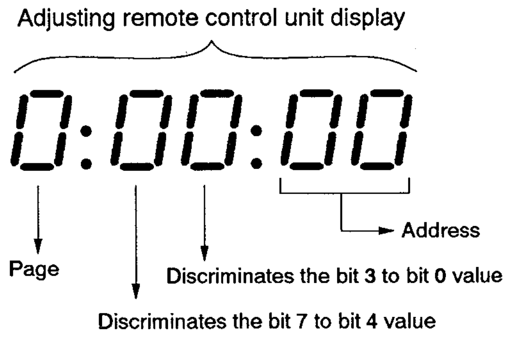
Last emergency mode
……The operation mode when the last error is generated
(This data will be modified each time an error occurs.)

- ※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.
- ※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.
- ※ Addresses 08 and 09 of page 0 and addresses 08 and 09 of page D have the same functions.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
36	-X1
37	-1/5 SLOW
46	CUE
47	1/10 SLOW
56	REVIEW
57	-1/10 SLOW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
76	-X2
77	-FRAME
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(–)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

8. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.


Adjusting remote control unit display
0:00:00
Address
Page
Discriminates the bit 3 to bit 0 value
Discriminates the bit 7 to bit 4 value

Remote Control Unit Display	Bit Value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A(A)	1	0	1	0
B(b)	1	0	1	1
C(c)	1	1	0	0
D(d)	1	1	0	1
Ⓑ→ E(E)	1	1	1	0
F(F)	1	1	1	1

(Example) When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column Ⓐ, and that of bit 3 to bit 0 can be discriminated from column Ⓑ.

9. Check of Tape Distinction Switch, etc.

Page 2	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
			$\overline{\text{CC DOWN}}$	$\overline{\text{REC PROOF}}$	ME/$\overline{\text{MP}}$		

"1"=ME tape
"0"=MP tape

"1"=Recording impossible
"0"=Recording possible

"0"=During cassette compartment lock

Page 1	Address 3D

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
V MUTE	A MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	LP/$\overline{\text{SP}}$

"1"=LP mode playback
"0"=SP mode playback

"1"=SYNC is detected
"0"=SYNC is not detected

"1"=CLOG is detected
"0"=Normal

"1"=When the PB RF signals are being playback normaly
"0"=Others

"1"=JOG mode
"0"=Other

"1"=Playback mode
"0"=Others

"1"=AUDIO MUTE: ON
"0"=AUDIO MUTE: OFF

"1"=VIDEO MUTE: ON
"0"=VIDEO MUTE: OFF

Page 1	Address 42

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
						DEW	

"0"=Dew outbreak
"1"=Others

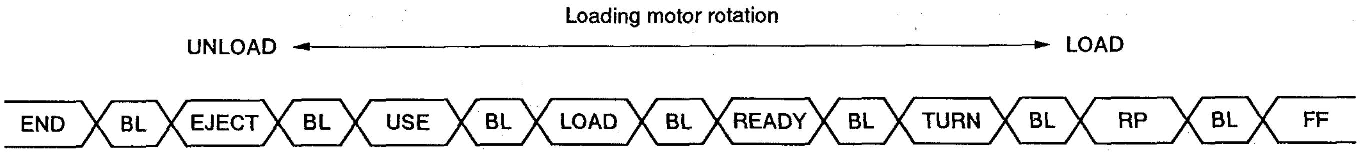
10. Mode Switch Check

The mode switch position (mechanical section condition) can be checked.

Page 2	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 0	MSW 1	MSW 2	$\overline{\text{CC DOWN}}$				

			POSITION	FUNCTION	$\overline{\text{CC DOWN}}$
1	1	1	BL	Interval of each position	
0	1	1	END	FULL END processing (T side lock removal)	1
0	0	1	EJECT	Cassette compartment ejection	1
1	0	1	USE	EJECTED (Unskate end)	1
0	0	1	LOAD	LOADING (Skate in)	0
1	0	0	READY	NORMAL STOP position	0
1	1	0	TURN	OFF of pinch roller only with PB ↔ REV (oscillating position)	0
0	1	0	RP	PB, REC, RVS, REV, REW	0
0	0	0	FF	FF/CUE	0


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

11. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14

Checking method:

1) Set data: 02 to page: 4, address: 0E.
   (A/D conversion processing active)
2) Set the data in the following table to page: 4, address: 13, and select the A/D port to be displayed.

Data	A/D Port
00	Pin (62) : AN0 (T REEL FG)
01	Pin (61) : AN1 (S REEL FG)
02	Pin (60) : AN2 (ATF ERROR)
03	Pin (59) : AN3 (BATT SENS)
04	Pin (58) : AN4 ($\overline{\text{DEW}}$)

3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

12. Tape Top/End Sensor Condition Check

Page 4	Address 0A

Checking method:

1) Set data: 10 to page: 4, address: 0E.
   (Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape end
1 0	Tape top
1 1	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non-active (Not receiving light)
"1"=Active (Receiving light)

13. Battery Voltage Check

Page 4	Address 10

Adjusting Remote Control Unit Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4Vdc
E0	Approx. 8.8Vdc
D0	Approx. 8.2Vdc
C0	Approx. 7.5Vdc
B0	Approx. 6.9Vdc
A0	Approx. 6.3Vdc
90	Approx. 5.6Vdc
80	Approx. 5.0Vdc

14. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
   (Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.
5) After checking the operations, turn off the main power (6.3 Vdc).

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

15. Mode control micro processor key matrix check

The key input can be checked.

Page 1	Address 68~6D

	Bit7	Bit6 (K IN 6)	Bit5 (K IN 5)	Bit4 (K IN 4)	Bit3 (K IN 3)	Bit2 (K IN 2)	Bit1 (K IN 1)	Bit0 (K IN 0)
Address 68 (K OUT 0)		LENS COVER OPEN (MF-214 S973)	VTR POWER (CF-34 S997)		PAUSE (VK-32 S984)		EJECT (DD-67 S901)	
Address 69 (K OUT 1)			CAMERA POWER (CF-34 S997 SW-223 S519)	FF (VK-32 S983)	PLAY (VK-32 S980)	REW (VK-32 S979)	STOP (VK-32 S976)	
Address 6A (K OUT 2)							COUNTER RESET (CF-34 S995)	
Address 6B (K OUT 3)					TIME (CF-34 S996)	DATE (CF-34 S993)		
Address 6C (K OUT 4)								
Address 6D (K OUT 5)							START/ STOP (SW-223 S520)	

"1"=key switch ON
"0"=key switch OFF

16. Wireless Remote Control Unit Reception Content Check

Page 1	Address 1E

Wireless remote control unit key pressed	**Data**
None	FF
TELE	9A
WIDE	9B
Start/stop	99
Rewind	1B
Fast forward	1C
Stop	18
Playback	1A
Data screen	5A
Pause	19
SLOW	23

17. EDIT Switch, Remote Commander Switch Check

Page 1	Address 0A

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
REC MODE (SP/LP)	REMOTE COMMANDER		EDIT				

Bit6:
"1"=OFF
"0"=ON

Bit4:
"1"=EDIT ON
"0"=EDIT OFF

Bit7:
"1"=LP
"0"=SP

18. White Balance Mode and Focus Mode Display/Switchover

Page 1	Address 9A

The mode can be switched when the data of page: 1, address: A3 is set to 04.

Data	White Balance Mode
∗ 1	INDOOR
∗ 2	OUTDOOR
∗ 3	HOLD
∗ 6	AUTO

Data	Focus Mode
0 ∗	Manual
1 ∗	Automatic

∗ : 0 to F

19. LCD, LED Check, etc.

Page 1	Address A3

Data	Mode
00	Normal
01	Key input prohibited
04	Camera function renewal prohibited

20. Page D Address List

Note 1: The adjustment data initial value is the data to be input before performing video section adjustment (page D), when the page D data has been erased due to some cause.

Note 2: The data listed in the adjustment data memo column are the fixed data.
Check that these data have not been accidentally rewritten, after completing adjustments.

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	Category code	Not used		
01	Test mode		00	00
02	Destination flag		AE	AE
03	BATT END	Battery end adjustment	8C	
04	SW POSITION	SW POSITION adjustment	00	
05	SW POSITION	SW POSITION adjustment	0A	
06	EMERGENCY code (FIRST)	Error code and mode are memorized. Rewrite the data of these addresses to 00 after repairs/adjustments	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP Normal SP)	CXA1207 serial data	24	24
0B	SR DATA (MP Normal LP)	CXA1207 serial data	16	16
0C	SR DATA (ME Hi8 SP)	CXA1207 serial data	24	24
0D	SR DATA (ME Hi8 LP)	CXA1207 serial data	16	16
0E	SR DATA (ME Normal SP)	CXA1207 serial data	24	24
0F	SR DATA (ME Normal LP)	CXA1207 serial data	16	16
10	SR DATA (MP Hi8 SP)	CXA1207 serial data	24	24
11	SR DATA (MP Hi8 LP)	CXA1207 serial data	16	16
12	SR DATA (EDIT ON Normal)	CXA1207 serial data	16	16
13	SR DATA (EDIT ON Hi8)	CXA1207 serial data	16	16
14	CAM TITLE BLU R-Y	Camera titler color adjustment [Blue]. Not used		
15	CAM TITLE BLU B-Y	Camera titler color adjustment [Blue]. Not used		
16	CAM TITLE GRN R-Y	Camera titler color adjustment [Green]. Not used		
17	CAM TITLE GRN B-Y	Camera titler color adjustment [Green]. Not used		
18	CAM TITLE CYN R-Y	Camera titler color adjustment [Light blue]. Not used		
19	CAM TITLE CYN B-Y	Camera titler color adjustment [Light blue]. Not used		
1A	CAM TITLE RED R-Y	Camera titler color adjustment [Red]. Not used		
1B	CAM TITLE RED B-Y	Camera titler color adjustment [Red]. Not used		
1C	CAM TITLE VIO R-Y	Camera titler color adjustment [Violet]. Not used		
1D	CAM TITLE VIO B-Y	Camera titler color adjustment [Violet]. Not used		
1E	CAM TITLE YEL R-Y	Camera titler color adjustment [Yellow]. Not used		
1F	CAM TITLE YEL B-Y	Camera titler color adjustment [Yellow]. Not used		
20	Permission plug		94	94
21	Adjustment plug	FORCED VTR ON, CAM ON etc DATA — MODE 01 — FORCED CAMERA POWER ON 02 — FORCED VTR POWER ON	00	00
22~29		Not used		

Table 9-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
2A	SLOW ADJ (FOWARD)		00	00
2B	SLOW ADJ (REVERSE)		00	00
2C	STILL ADJ		00	00
2D	BATT REMAIN LEVEL 1	Amount of remaining battery 1	A0	
2E	BATT REMAIN LEVEL 2	Amount of remaining battery 2	99	
2F	BATT REMAIN LEVEL 3	Amount of remaining battery 3	94	
30~42		Not used		
43	1-ch M.T NORMAL	1 ch playback frequency characteristic adjustment [IC158 ②]	C0	
44				
45	2-ch M.T NORMAL	2 ch playback frequency characteristic adjustment [IC158 ③]	C0	
46	REC C RF (EE)	REC C RF level adjustment (EE) [IC156 ⑩]	B8	
47	REC C RF (PB)	REC C RF level adjustment (PB) [IC156 ⑩]	00	00
48	RF CONT (ME)	ATF RF level (ME) [IC158 ⑤]	64	64
49	RF CONT (MP)	ATF RF level (MP) [IC158 ⑤]	70	70
4A	EE LEVEL	EE level adjustment [IC156 ⑮]	70	70
4B		Not used		
4C	COMB ADJ	Chroma comb filter adjustment [IC156 ③]	A8	
4D	SR-IR	IR adjustment [IC156 ②]	AE	
4E	Y-FM CARRIER (Hi8)			
4F	Y-FM CARRIER (NORMAL)	Y-FM carrier frequency adjustment [IC156 ⑤]	A8	
50	Y-FM DEVIATION (Hi8)			
51	Y-FM DEVIATION (NORMAL)	Y-FM deviation adjustment [IC156 ⑥]	95	
52	REC Y LEVEL (EE Hi8 ME)			
53	REC Y LEVEL (EE Hi8 MP)			
54	REC Y LEVEL (EE NOR ME)	REC Y recording current adjustment (ME) [IC156 ⑦]	95	
55	REC Y LEVEL (EE NOR MP)	REC Y recording current adjustment (MP) [IC156 ⑦]	95	
56	REC Y LEVEL (PB)	Playback REC Y level [IC156 ⑦]	00	00
57	PB Y LEVEL (EE)	EE PB Y level [IC158 ⑮]	00	00
58	PB Y LEVEL (Hi8)			
59	PB Y LEVEL (NORMAL)	Normal PB Y level adjustment [IC158 ⑮]	B0	
5A	EMPHASIS INPUT LEVEL	EE emphasis input level adjustment [IC156 ④]	A5	
5B	PB LINE LEVEL	Playback emphasis input level adjustment [IC156 ④]	AF	
5C~79		Not used		
7A	1.5 IR	1.5 MHz IR adjustment [IC158 ⑥]	A0	
7B	1.5 DEV	1.5 MHz deviation adjustment [IC158 ⑦]	A0	
7C~FF		Not used		

Table 9-2 (2)

9-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD-67 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q903 collector
Measuring Instrument	Frequency counter
Specified Value	510 ± 35 kHz

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD-67 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVF 5V check	
Measurement Point	Pin ⑪ of CN901
Specified Value	4.93 ± 0.15 Vdc
D5V check	
Measurement Point	Pins ⑤ and ⑧ of CN901
Specified Value	4.92 ± 0.15 Vdc
D4V check	
Measurement Point	Pin ④ of CN901
Specified Value	3.98 ± 0.15 Vdc
VID 5V check	
Measurement Point	Pins ⑰, ⑳ of CN901
Specified Value	4.90 ± 0.10 Vdc
RP 5V check	
Measurement Point	Pin ㉒ of CN901
Specified Value	4.89 ± 0.15 Vdc
AU5V check	
Measurement Point	Pin ⑲ of CN901
Specified Value	4.90 ± 0.15 Vdc
CAM5V check	
Measurement Point	Pins ⑦ and ⑩ of CN901
Specified Value	$4.86^{+0.15}_{-0.11}$ Vdc
CAM15V check	
Measurement Point	Pin ⑫ of CN901
Specified Value	15.05 ± 0.4 Vdc
CAM –9V check	
Measurement Point	Pin ⑨ of CN901
Specified Value	–8.5 ± 0.4 Vdc

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "9-1-8. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 7D

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END) 2D (BATT REMAIN LEVEL 1) 2E (BATT REMAIN LEVEL 2) 2F (BATT REMAIN LEVEL 3)

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

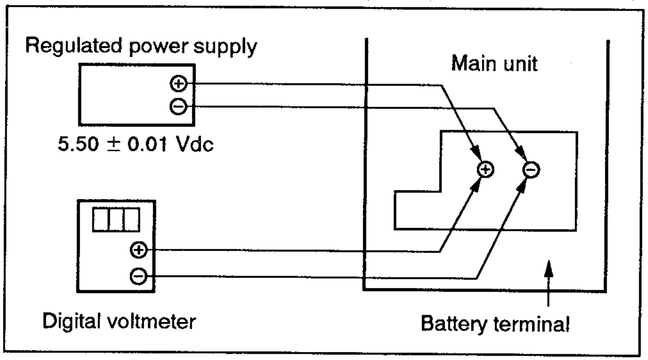


Fig. 9-4.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01.
   (Test mode 1 setting)
4) Set to the camera recording mode.
5) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
6) Select page: 4, address: 10, read the adjusting remote control unit display data, and set to DEND.
7) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
8) Convert DEND to decimal to obtain DEND′. (Refer to Table 7-6. "Hexadecimal notation – decimal notation conversion table")
9) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
   Address: 2D D2D′=DEND′+18
   Address: 2E D2E′=DEND′+14
   Address: 2F D2F′=DEND′+8
   Note: After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
10) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (Test mode 1 release)
11) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.70 ± 0.01 Vdc.
4) Check that the 🪫 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.58 ± 0.01 Vdc.
6) Check that the 🪫 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
8) Check that the 🪫 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

9-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-116 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ④ of CN002 (RF SWP) CH2: Pin ③ of CN002 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) 05 (SW POSITION)
Specified Value	t_1=0 ± 10 μsec

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 0A to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t_1". (Coarse adjustment)
4) Press the PAUSE button of the remote control unit.
5) Change the data of page: D, address: 04, and adjust so that the switching position (t_1) becomes the specified value. (Fine adjustment)
6) Press the PAUSE button of the adjusting remote control unit.

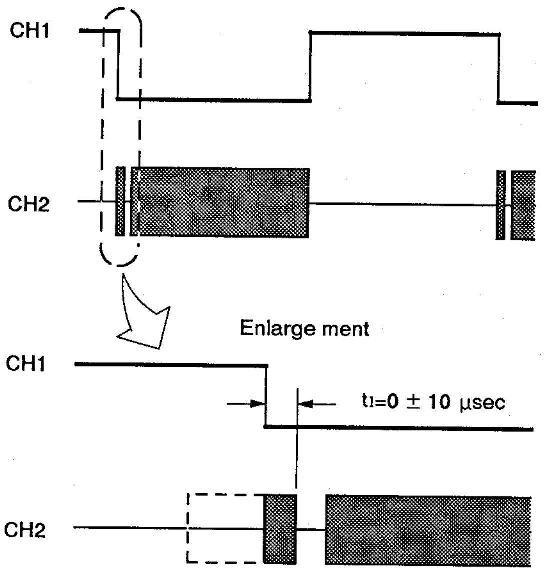


Fig. 9-5.

9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 9-2.

[Adjusting procedure]

1) Playback frequency characteristic adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) EE level adjustment
5) IR adjustment
6) Y/C separation adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB LINE OUT level adjustment
10) Y FM carrier frequency adjustment
11) Deviation adjustment
12) Chroma emphasis f_0 adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) REC ATF level check
16) REC AFM level check

1. Playback Frequency Characteristic Adjustment (VS-116 board)

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6C)
Measurement Point	CH1: Pin ③ of CN002 EXT TRIG: Pin ④ of CN002
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [–]
Adjustment Page	D
Adjustment Address	43 (MT 1CH) [45 (MT 2CH)]
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 05, set data: 10.
3) Press the PAUSE button of the adjusting remote control unit.
4) Change the data of address: 43 [45] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
   Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.
5) Set the data memorized at step 2) to page: D, address: 05, and press the PAUSE button of the adjusting remote control unit.

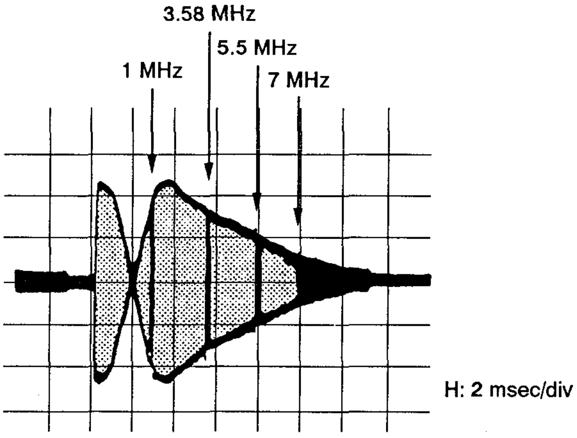


Fig. 9-6.

2. Flying Erase Check (VS-116 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of W001 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: approx. 7.5 MHz Voltage: Above 1.5 Vp-p

Note: Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is approx. 7.5 MHz and that the oscillation voltage is above 1.5 Vp-p.

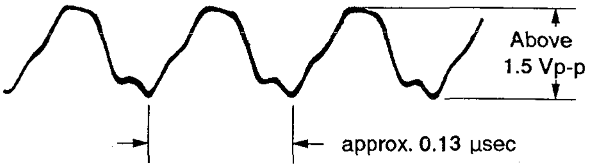


Fig. 9-7.

3. VXO Oscillation Frequency Check (VS-116 board)

Mode	STOP
Signal	Color bar
Measurement Point	Pin ⑫ of IC152
Measuring Instrument	Frequency counter
Specified Value	4433618 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC152 is 4433618 ± 70 Hz.

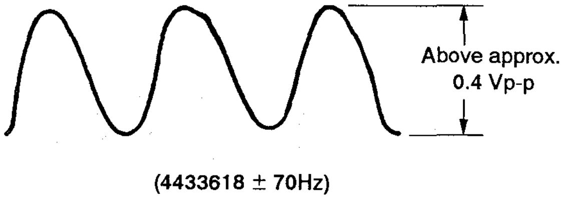


Fig. 9-8.

4. EE Level Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ② of CN101 (VIDEO OUT)[Note]
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (EE LEVEL)
Specified Value	A=1.00 ± 0.025V

Note: Terminate pin ② of CN101 at 75 Ω.
After completing adjustments, remove the 75 Ω resistor.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

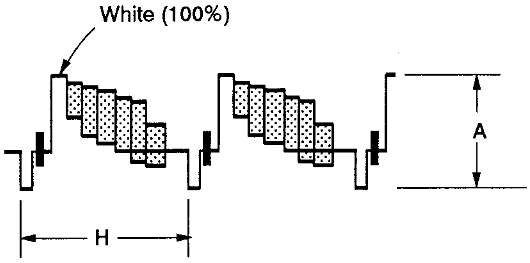


Fig. 9-9.

5. IR Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑦ of IC151 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 80 mVp-p)

Connection

1) Connect pin ⑭ of IC151 (VREF: 3.5 Vdc) or pin ② of IC159 to pin (51) of IC151 with a jumper wire.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
3) Press the PAUSE button of the adjusting remote control unit.

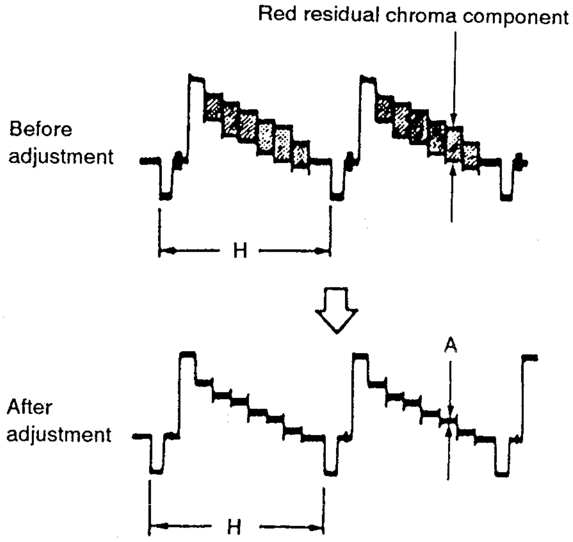


Fig. 9-10.

6. Y/C Separation Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑪ of IC151 (C+CD)
Adjusting Element	Oscilloscope
Measuring Instrument	RV051 (Phase)
Adjustment Page	D
Adjustment Address	4C (Y/C SEP DL LEVEL)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
3) Adjust RV051 so that the residual chroma component (A) becomes minimum.
5) Press the PAUSE button of the adjusting remote control unit.

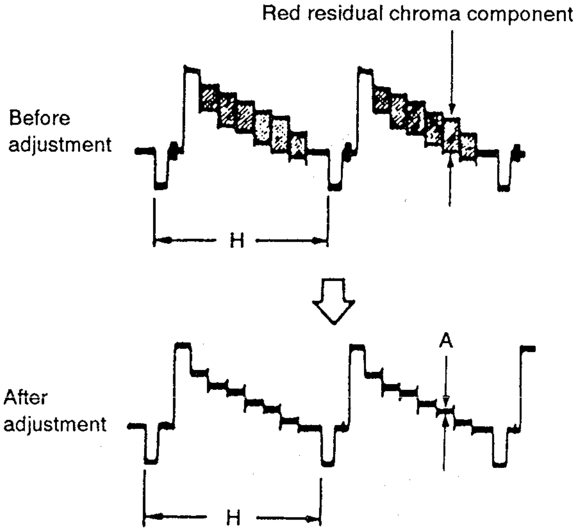


Fig. 9-11.

7. Emphasis Input Level Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar without burst signal
Measurement Point	Pin ③ of IC155 (or Pin ③ of IC151)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPHASIS INPUT LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

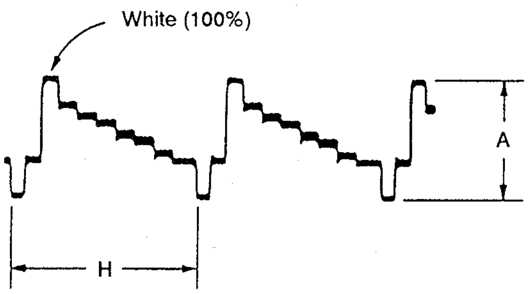


Fig. 9-12.

8. PB Y Level Adjustment (VS-116 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (NORMAL PB Y LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

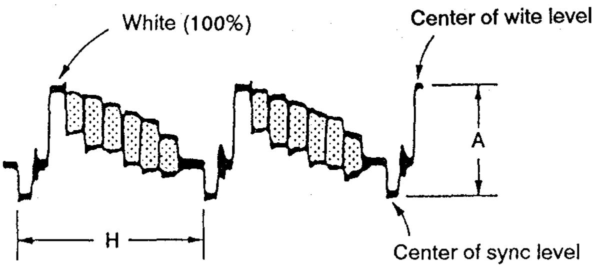


Fig. 9-13.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal (terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	A=1.0 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

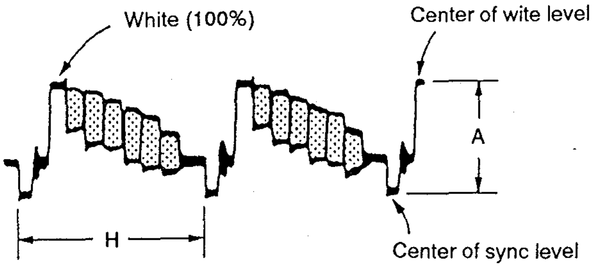


Fig. 9-14.

10. Y FM Carrier Frequency Adjustment (VS-116 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑤ of IC003 (REC Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (Y FM CARRIER)
Specified Value	4.38 ± 0.04 MHz

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Perform "Deviation Adjustment".

Pin ⑤ of IC003 waveform

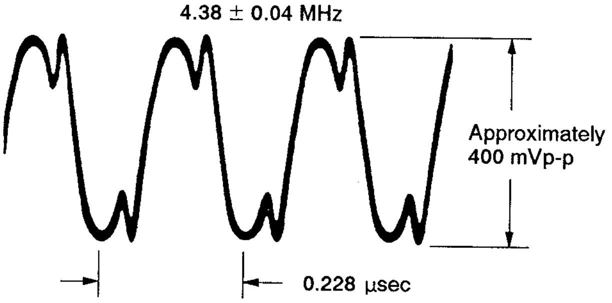


Fig. 9-15.

11. Deviation Adjustment (VS-116 board)

Mode	Record and playback
Signal	Color bar
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (Y FM DEVIATION)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.025V
5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote control unit.

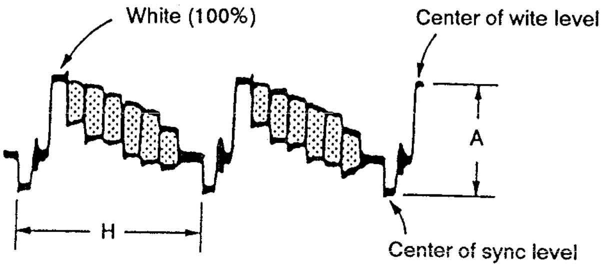


Fig. 9-16.

12. Chroma Emphasis fo Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ㉔ of IC152
Measuring Instrument	Oscilloscope
Adjustment Element	FL153
Specified Value	Minimum fo component

Connection:
1) Connect pin ㉔ of IC152 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method
1) Adjust FL153 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

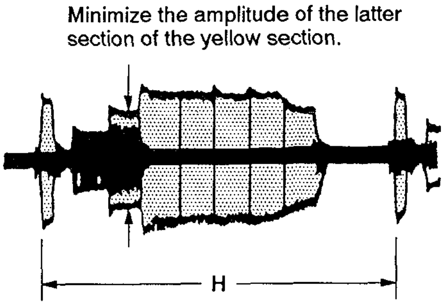

Minimize the amplitude of the latter section of the yellow section.
H

Fig. 9-17.

13. REC Y Level Adjustment (VS-116 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑤ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	55 (REC Y LEVEL EE NOR MP) 54 (REC Y LEVEL EE NOR ME)
Specified Value	A=205 ± 5 mVp-p

Note: Use a MP type tape.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Set the data of page: D, address: 55 to page: D, address: 54.
5) Press the PAUSE button of the adjusting remote control unit.

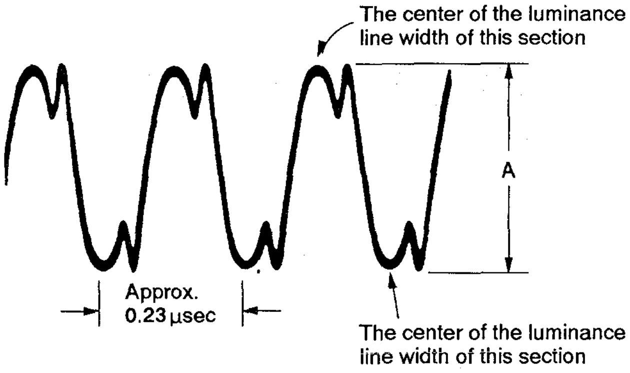

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 9-18.

14. REC C Level Adjustment (VS-116 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ③ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C RF (EE))
Specified Value	A=110 ± 10 mVp-p

Note: Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 46, and adjust so that the REC C level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

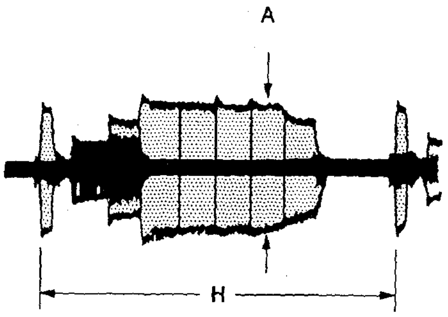


Fig. 9-19.

15. REC ATF Level Check (VS-116 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ㉔ of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	A=8 ± 2 mVp-p

Note: Use a MP type tape.

Connection:

1) Remove the AU-171 board CN602.

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC ATF signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

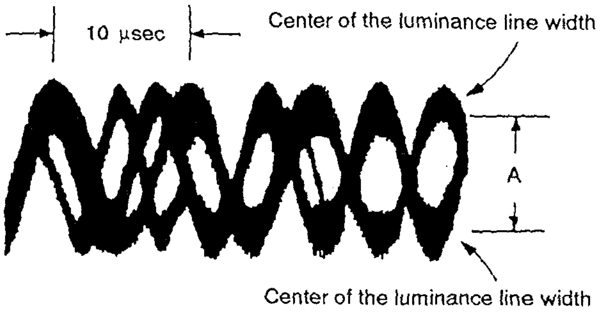


Fig. 9-20.

16. REC AFM Level Check (VS-116 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ㉔ of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	A=9 ± 2 mVp-p

Note: Use a MP type tape.

Connection:

1) Connect Pin ⑨ of IC404 and GND with a 0.01 µF capacitor (1-101-004-00).

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC AFM signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

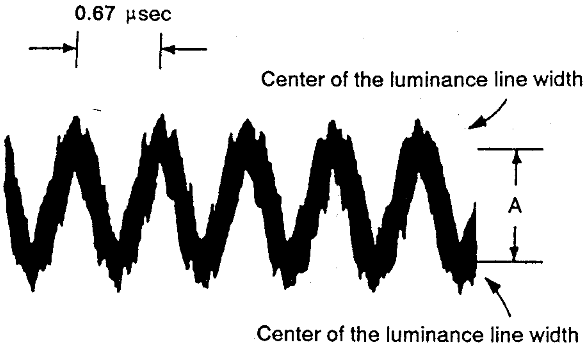
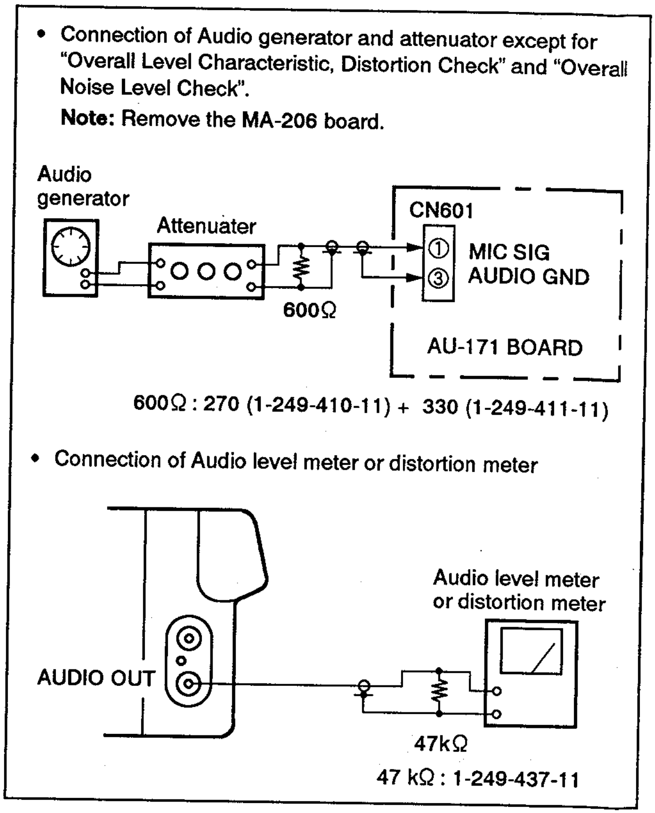


Fig. 9-21.

9-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 9-22, and perform adjustments with the power switch [player] position.



- Connection of Audio generator and attenuator except for "Overall Level Characteristic, Distortion Check" and "Overall Noise Level Check".
  Note: Remove the MA-206 board.

600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)

- Connection of Audio level meter or distortion meter

47 kΩ : 1-249-437-11

Fig. 9-22.

[Adjustment Procedure]

1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Record level check
6) Overall level characteristics, distortion check
7) Overall noise level check

1. E-E Output Level Check (AU-171 board)

Mode	Record
Signal	400 Hz, –36.1 dBs, pin ① of CN601
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:
1) Check that the 400 Hz signal level satisfies the specified value.

2. IR Adjustment (AU-171 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	+: Pin ⑥ of IC601 –: Pin ㊹ of IC601 (C629 ⊕)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	7A (1.5 IR)
Specified Value	The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7A and adjust so that the DC voltage becomes 0 ± 10 mVdc.
3) Press the PAUSE button of the adjusting remote control unit.

3. Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

4. Carrier Frequency Check (AU-171 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉛ of CN602 (REC AFM)
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:
1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

5. Record Level Check (AU-171 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉛ of CN602 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	A=48 ± 8 mVp-p

Checking method:
1) Check that the 1.5 MHz carrier level satisfies the specified value.
   (Read the center of the luminance line width and note down the level read.)

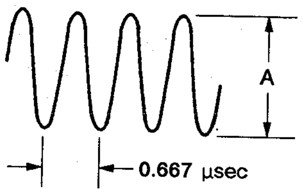


Fig. 9-23.

6. Overall Level Characteristic, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –66 dBs: Ext mic jack
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2 dBs Distortion rate: Below 0.8% (Note 1)

Note: 1) Value when the following filter is used

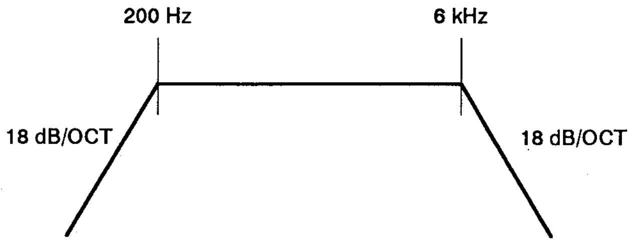


Fig. 9-24.

Checking method:

1) Input the 400 Hz, –66 dBs signal to the ext mic jack.

3) Remove the input signal.

4) Playback the recorded section.

5) Check that the 400 Hz signal level of the audio output terminal is –7.5 ± 2 dBs, and that the distortion rate is below 0.8% (Note 1).

7. Overall Noise Level Check

Mode	Self recording
Signal	No signal: Ext mic jack
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –50.0 dBs

Checking method:

1) Insert the shorting plug to the ext mic jack.

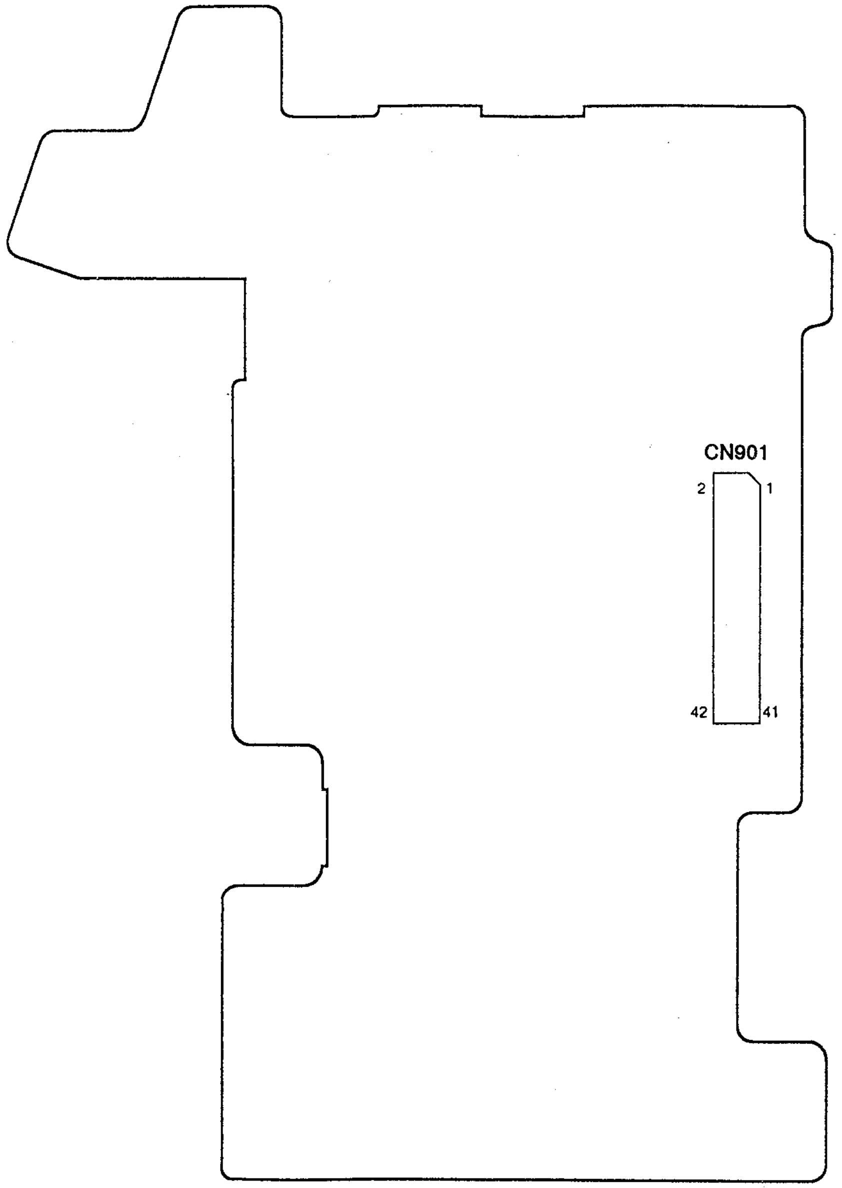
2) Record.

3) Playback the recorded section.

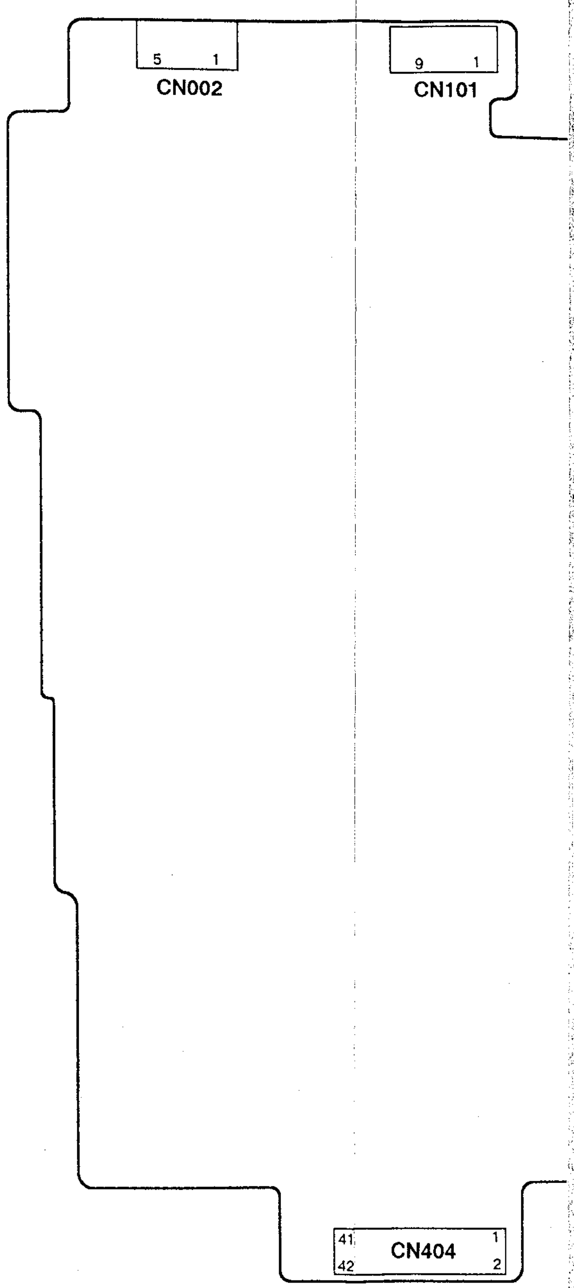
4) Check that the noise level of the audio output terminal is below –50.0 dBs.

9-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

DD-67 BOARD (COMPONENT SIDE)

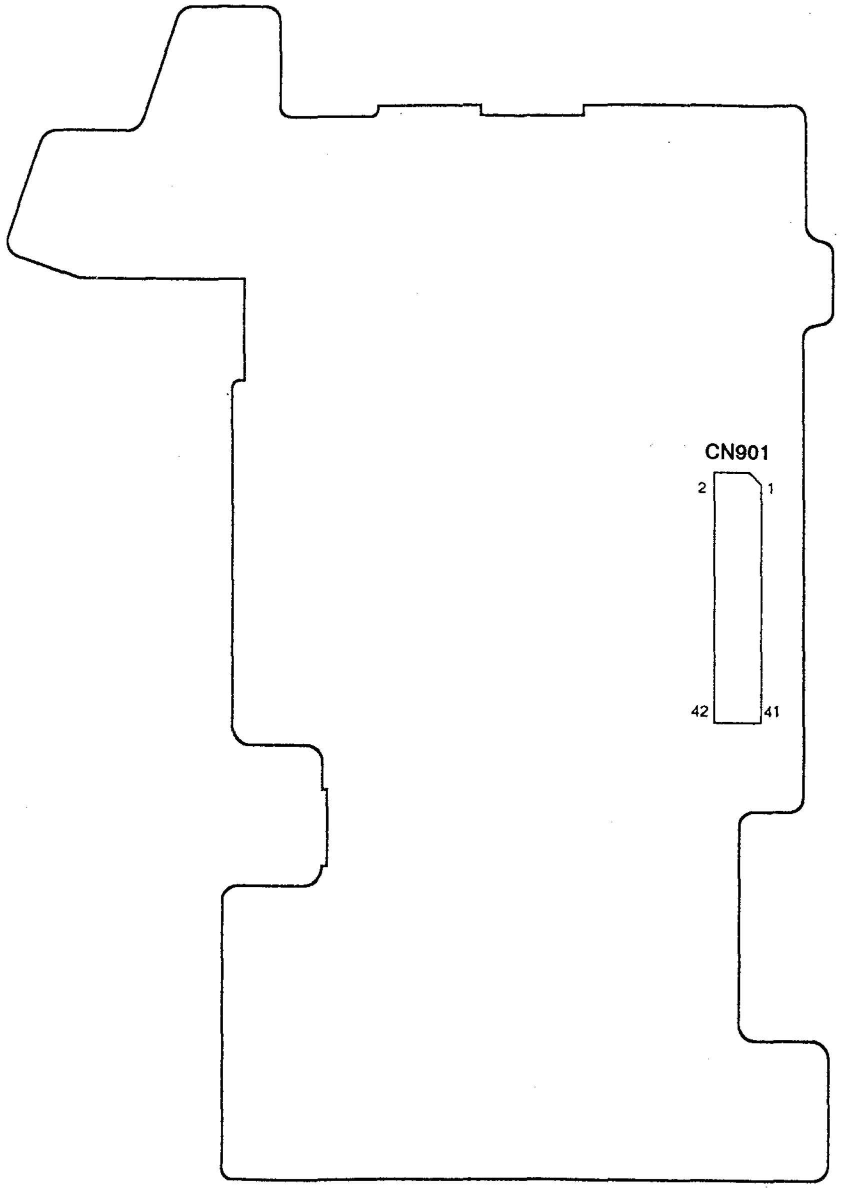


VS-116 BOARD (COMPONENT SIDE)

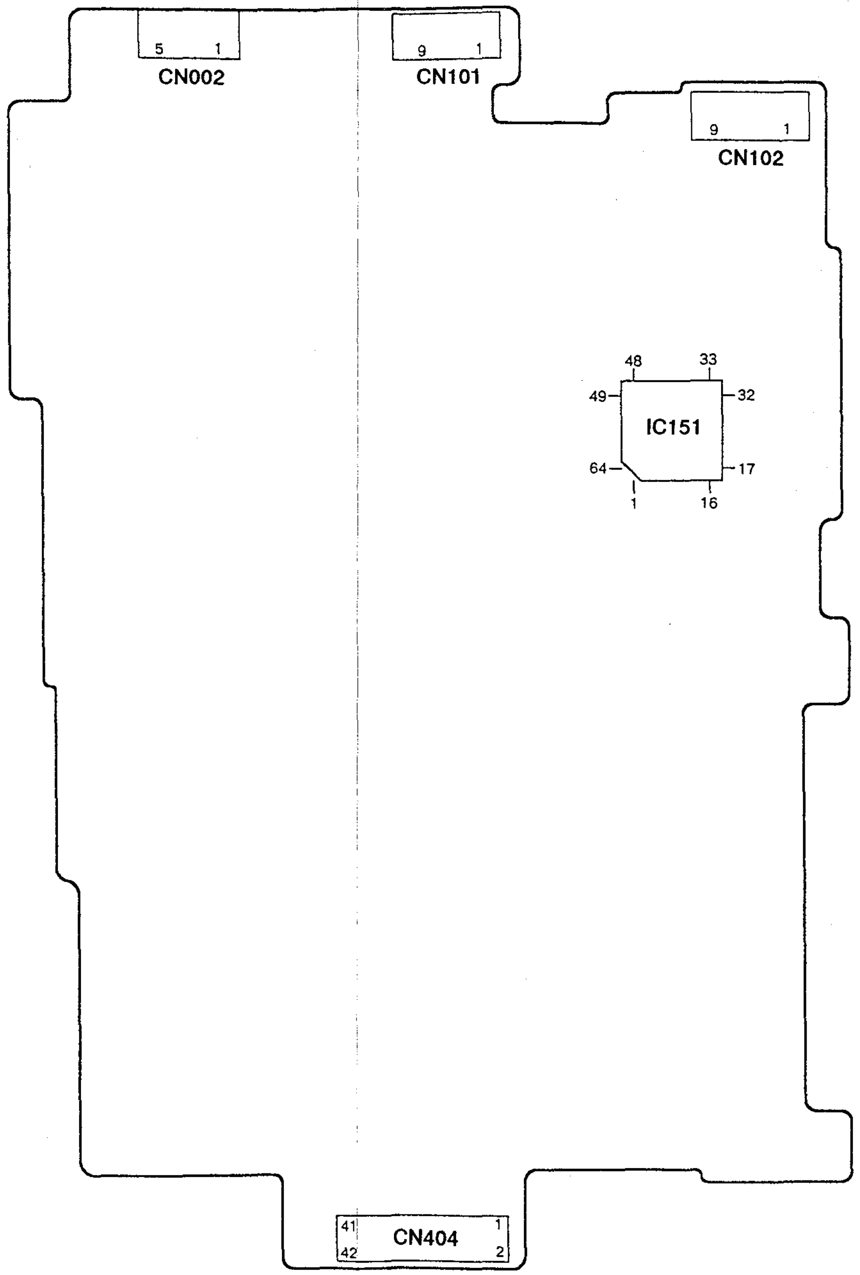


9-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

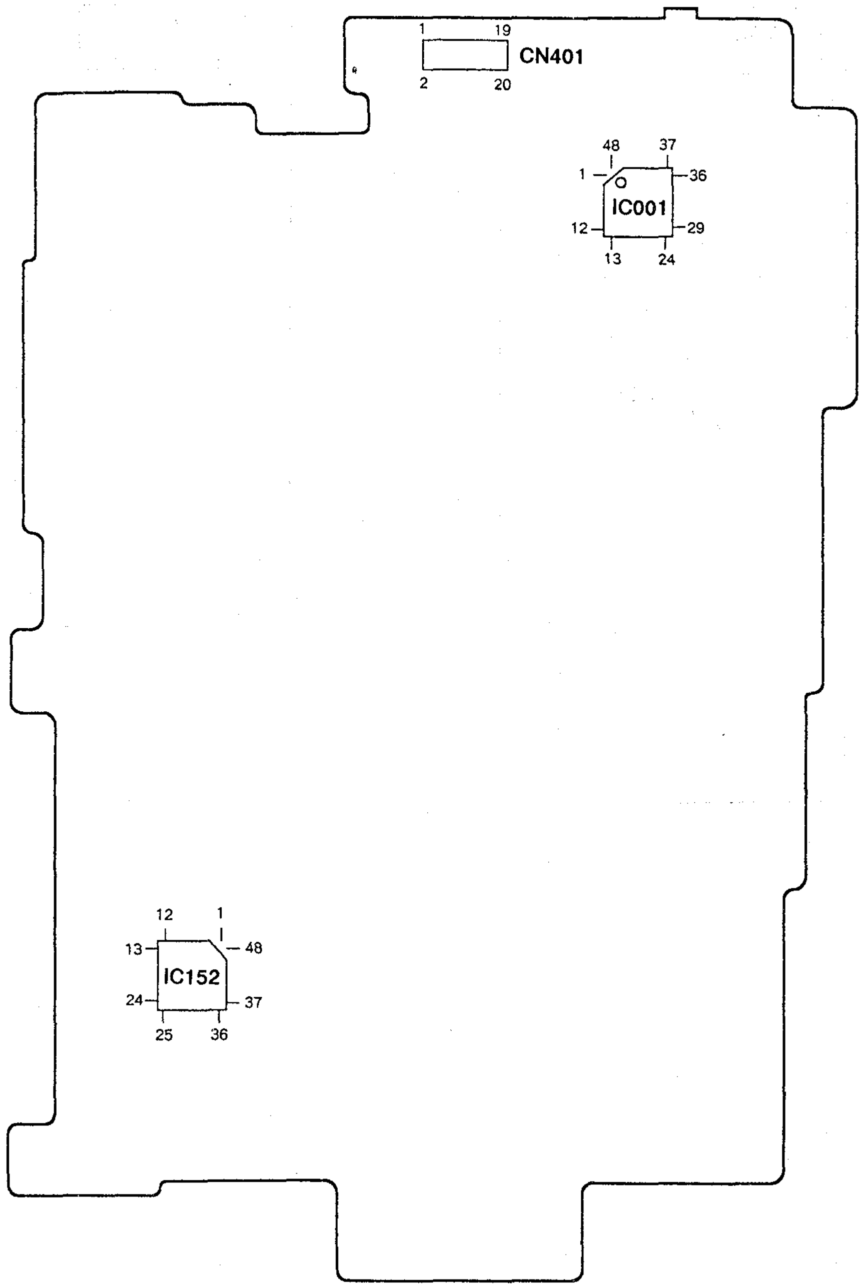
DD-67 BOARD (COMPONENT SIDE)


CN901
2
1
42
41

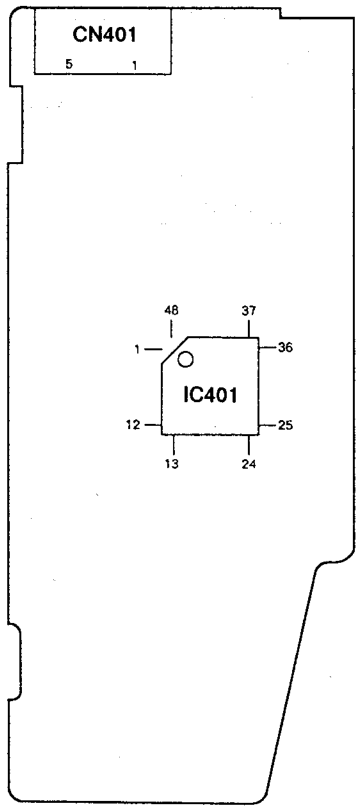
VS-116 BOARD (COMPONENT SIDE)


5
1
CN002
9
1
CN101
9
1
CN102
48
33
49
32
IC151
64
17
1
16
41
1
CN404
42
2

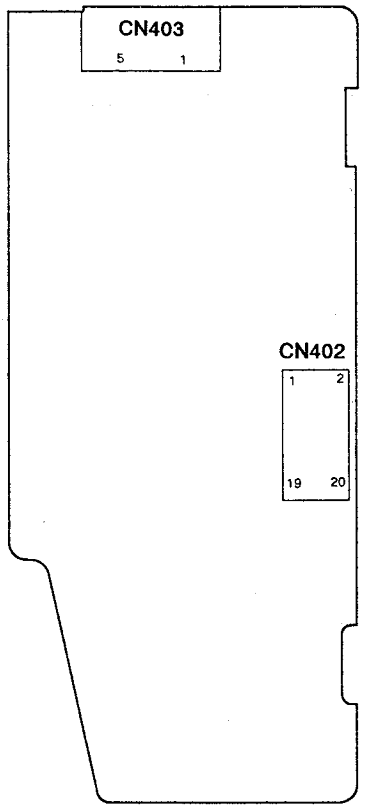
VS-116 BOARD (CONDUCTOR SIDE)


1
19
CN401
2
20
48
37
1
36
IC001
12
29
13
24
12
1
13
48
IC152
24
37
25
36

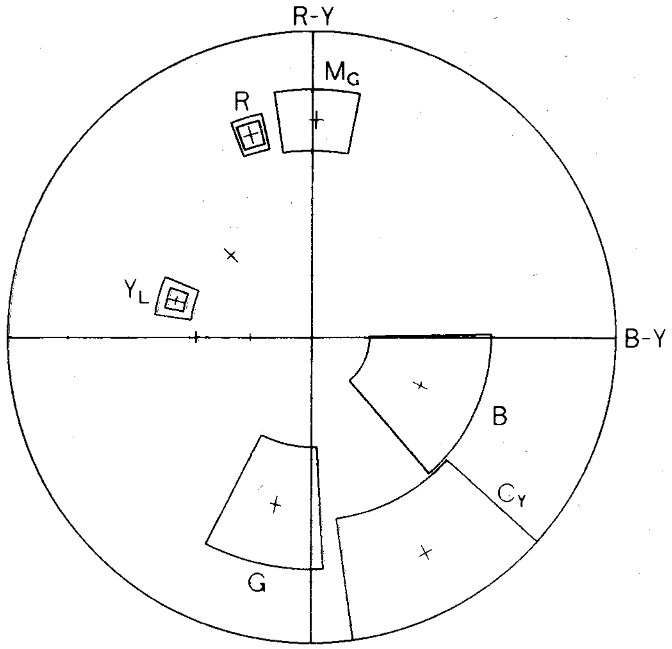
AU-171 BOARD (COMPONENT SIDE)


CN401
5
1
48
37
1
36
IC401
12
25
13
24

AU-171 BOARD (CONDUCTOR SIDE)


CN403
5
1
CN402
1
2
19
20

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT


R-Y
M_G
R
Y_L
B-Y
B
C_Y
G

CCD-TR350E